MONTHLY WEATHER REVIEW.

Editor: Prof. CLEVELAND ABBE.

VOL. XXVIII. JUNE, 1900. No. 6

INTRODUCTION.

The MONTHLY WEATHER REVIEW for June, 1900, is based on reports from about 3,101 stations furnished by employees and voluntary observers, classified as follows: regular stations of the Weather Bureau, 158; West Indian service stations, 12; special river stations, 132; special rainfall stations, 48; voluntary observers of the Weather Bureau, 2,562; Army post hospital reports, 22; United States Life-Saving Service, 9; Southern Pacific Railway Company, 96; Canadian Meteorological Service, 32; Mexican Telegraph Service, 20; Mexican voluntary stations, 7; Mexican Telegraph Company, 3. International simultaneous observations are received from a few stations and used, together with trustworthy newspaper extracts and special reports.

Special acknowledgment is made of the hearty cooperation of Prof. R. F. Stupart, Director of the Meteorological Service of the Dominion of Canada; Mr. Curtis J. Lyons, Meteorologist to the Hawaiian Government Survey, Honolulu; Señor Manuel E. Pastrana, Director of the Central Meteorological and Magnetic Observatory of Mexico; Camilo A. Gonzales, Director-General of Mexican Telegraphs; Mr. Maxwell Hall, Government Meteorologist, Kingston, Jamaica; Capt. S. I. Kimball, Superintendent of the United States Life-Saving Service; and Commander Chapman C. Todd, Hydrographer, United States Navy.

The REVIEW is prepared under the general editorial supervision of Prof. Cleveland Abbe.

Attention is called to the fact that the clocks and self-registers at regular Weather Bureau stations are all set to seventy-fifth meridian or eastern standard time, which is exactly five hours behind Greenwich time; as far as practicable, only this standard of time is used in the text of the REVIEW, since all Weather Bureau observations are required to be taken and recorded by it. The standards used by the public in the United States and Canada and by the voluntary observers are believed to conform generally to the modern international system of standard meridians, one hour apart, beginning with Greenwich. The Hawaiian standard meridian is 157° 30′ or $10^h\ 30^m$ west of Greenwich. Records of miscellaneous phenomena that are reported occasionally in other standards of time by voluntary observers or newspaper correspondents are sometimes corrected to agree with the eastern standard; otherwise, the local standard is mentioned.

FORECASTS AND WARNINGS.

By Prof. E. B. GARRIOTT, in charge of Forecast Division.

No severe storms of a general character occurred in the United States or the West Indies during June, 1900.

The weather continued very dry in the Northwestern States, and the upper Mississippi River reached the lowest June stage noted in many years.

The local rains of the month were, as a rule, forecast.

CHICAGO FORECAST DISTRICT.

No special warnings of storms were issued. The daily forecasts, however, were of great value, especially on account of the critical condition of the spring wheat in the Northwest. The showers which occurred in that section were generally forecast.—*H. J. Cox, Professor.*

SAN FRANCISCO FORECAST DISTRICT.

The month has been, as a whole, uneventful. There were no serious northers.—*Alexander G. McAdie, Forecast Official.*

PORTLAND, OREG., FORECAST DISTRICT.

The month was free from all unusual atmospheric disturbances, and no frost or storm warnings were issued.—*Edward A. Beals, Forecast Official.*

HAVANA FORECAST DISTRICT.

No disturbances occurred during the month, and no special warnings were issued.—*William B. Stockman, Forecast Official.*

AREAS OF HIGH AND LOW PRESSURE.

During the month there were charted five highs and eight lows. (See Charts I and II.) A brief description of some of their more marked characteristics follows herewith:

Highs.—No. I was the final development of the Pacific coast high which persisted, with varying intensity, during the second and third decades of the previous month. On the last day of May it began to move eastward from the Washington coast, maintained an almost due easterly course, and in four days passed over Cape Breton Island into the Atlantic. During its passage over Montana and the Dakotas, on the 1st and 2d, light frosts were quite numerous. No. II originated in the Valley of the Red River of the North, and moved eastward off the Massachusetts coast in two and one-half days. No. III originated in the central Rocky Mountain region, moved northeastward to Lake Superior, and thence eastward over Cape Breton Island. No. IV first appeared in southern Alberta, moved southeastward to northern Kansas, and thence northeastward to western Lake Superior; afterwards its progress was generally eastward to central Ontario, where it dissipated. No. V was first noticed on the California coast,

moved northward to British Columbia, thence eastward to Manitoba, and thence east-southeastward to the southern New Jersey coast. It was last noticed at Bermuda, seven and one-half days after leaving California, and was then at its maximum intensity.

In addition to the highs which had a definite movement, there were several others, which remained stationary for a number of days and then disappeared. Of such a character were those on the Pacific coast from the 3d to the 7th, the 15th to the 19th, and after the 25th. This latter high persisted, after sending off to the northward and eastward a moderate wave, which has already been described above as No. V.

It is also worthy of note that none of the highs moved across that portion of the country south of the fortieth parallel.

Movements of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long W.	Length.	Duration.	Daily.	Hourly.
High areas.		°	°		°	°	*Miles.*	*Days.*	*Miles.*	*Miles.*
I	31, a.m.*	47	123	4, a.m.	46	60	3,425	4.0	856	35.7
II	8, a.m.	47	97	10, p.m.	42	70	1,480	2.5	592	24.7
III	10, a.m.	43	109	14, a.m.	46	60	2,630	4.0	658	27.4
IV	12, a.m.	51	114	15, p.m.	45	80	2,395	3.5	684	28.5
V	25, p.m.	41	124	3, a.m.†	33	65	4,195	7.5	559	23.3
Sums							14,125	21.5	3,349	139.6
Mean of 5 paths							2,825		670	27.9
Mean of 21.5 days									657	27.4
Low areas.										
I	30, p.m.*	39	109	2, p.m.	43	70	2,100	3.0	700	29.2
II	2, a.m.	54	114	3, p.m.	43	100	1,075	1.5	717	29.9
III	5, a.m.	54	114	8, p.m	48	68	2,220	3.5	634	26.4
IV	7, p.m.	52	114	12, a.m.	48	52	2,960	4.5	658	27.4
				14, p.m.	35	90	2,960	7.0	423	17.6
V	13, a.m.	42	91	16, a.m.	48	52	1,935	3.0	645	26.9
VI	22, p.m.	32	96	24, p.m.	35	90	655	2.0	328	13.7
VII	24, p.m.	48	104	1, p.m.†	46	60	2,275	7.0	325	13.5
VIII	28, p.m.	43	112	9, a.m.†	48	68	3,575	10.5	340	14.2
Sums							19,755	42.0	4,770	198.8
Mean of 9 paths							2,195		530	22.1
Mean of 42 days									470	19.6

*May. †July.

Lows.—No. I originated in western Colorado, moved northeastward to western South Dakota, and thence eastward off the Maine coast. Nos. II, III, and IV first came within the field of observation in Alberta. No. II moved southeastward to northern Nebraska, where it dissipated. No. III and one section of No. IV continued almost due eastward to the Atlantic. The second section of No. IV moved southeastward and southward through Texas to western Gulf of Mexico, turned northward through Mississippi, and dissipated in extreme western Tennessee. No. V was an offshoot from the northern edge of the lower section of No. IV. It moved from eastern Iowa northeastward through the St. Lawrence Valley and Newfoundland. No. VI was a moderate local disturbance in the west Gulf States. No. VII originated in northwestern North Dakota, and quite closely followed the paths of No. III and the upper section of No. IV. No. VIII was at once the most pronounced, peculiar, and persistent depression of the month. It originated during the 28th in southeastern Idaho, pursued a very slow and erratic course for seven and one-half days over the northern and middle slopes, dipping down into eastern Colorado, and finally, turning eastward from eastern North Dakota, it passed out of the St. Lawrence Valley ten and one-half days after it was first noted in Idaho. The minimum pressure reached was 29.20 inches, at Winnipeg, on the morning of July 6.

There was a pronounced low over Texas from the evening of the 16th until the morning of the 19th. It moved very slightly and was accompanied by high temperatures with very little rain. There was also a practically continuous depression over the British Northwest Territory from the 14th to the 26th, resulting, as a rule, in temperatures considerably above normal over the district from the Mississippi Valley westward to the Rocky Mountains.

There were two lows which first came within the field of observation in northern New Brunswick. The center of one depression reached Father Point on the evening of the 21st, and the other three days later. A study of the pressure conditions for several days previous leads to the conclusion that these lows moved southeastward over the country north of the sixtieth parallel, and were probably prevented from extending farther to the southward by the ridge of high pressure which at that time overspread the country from Minnesota eastward.—*H. C. Frankenfield, Forecast Official.*

RIVERS AND FLOODS.

In the Mississippi River above the mouth of the Ohio River there was a gradual though steady decrease in the water stages, except below the mouth of the Missouri River, where the fall was interrupted by the advent of a moderate tide from the latter river, which set in about the 21st. The average stages in the Missouri River were about 1.5 foot higher than during May, 1900.

Below Cairo, Ill., the average stages of the Mississippi River were also somewhat lower than during May, although there was a rise during the third decade, due to a combination of the rise out of the Missouri River and another from the Tennessee River. This latter river was above the danger line of 21 feet at Johnsonville, Tenn., after the 26th, reaching a stage of 29.5 feet on the 30th, but with only some minor damage to growing crops.

As compared with June, 1899, the stages throughout the entire Mississippi system were considerably lower, except in the Tennessee River.

River matters over the Atlantic and Gulf systems were uneventful except in Alabama and the South Atlantic States. In the former State the heavy rains from the 23d until the 28th caused a rapid rise in the rivers, and danger-line stages were reached at many points. The following report on the floods in the Coosa and Alabama rivers was made by Mr. F. P. Chaffee, Official in Charge of the Weather Bureau office at Montgomery, Ala:

Heavy rains over the watershed of the Coosa River on June 23 and 24 started a rather rapid rise in the tributaries of that river on the 24th, and warning was then issued for a rapid rise at Rome, Ga., and as far south as Wetumpka, Ala., during the next two days, with moderate flood stages at Gadsden, Ala. The heavy rains continued through the 25th, spreading southward over the middle portion of the State, and supplemental warnings were issued for about a 22-foot stage (or 4 feet above danger line) at Gadsden, 33 feet at Wetumpka, 31 feet at Montgomery, and 32 feet at Selma, Ala. The rivers rose steadily at all points during the 25th and 26th, the rise being nearly 14 feet in forty-eight hours at Wetumpka, about 13 feet at Montgomery, and nearly 11 feet at Selma. Additional heavy rains fell over the entire watershed on the 27th and 28th, and further warning was issued on the morning of the 28th for a continued but slow rise in the Alabama River, and advising the removal of stock and other movable property from lands subject to overflow at 35 feet, from above Wetumpka, to about 100 miles south of Selma. The waters reached the 34.8-foot mark at Wetumpka, during the night of 27-28th, 33.2 feet at Montgomery during afternoon of the 29th, and 35 feet at Selma, by morning of the 30th. The warnings were very widely distributed by telegraph, telephone, and mail, and through the local press; it is thought that there was not a city, town, or village, along the rivers mentioned, which did not receive ample warning in advance of these high waters, which were the highest in any June for which we have a record. The stages specified were not exceeded, and were very nearly, if not quite, reached in every case.

Large numbers of stock which were pastured in the low grounds were driven to places of safety; considerable hay and oats, which would otherwise have been ruined, were cut and carried to higher ground, and much green corn, which would have been a total loss, was cut down and saved for stock food. However, much damage was done, which no warning could avert, especially to lowland corn and cotton, large areas of which were inundanted and entirely ruined, though the waters have now receded and much of the inundated district will be replanted in corn. The warnings, it is thought, were the means of saving at least $35,000 worth of stock and other property.

The lower Tombigbee and the Black Warrior rivers were also from 17 to 20 feet above the danger lines, but no reports of serious damage have been received. The rivers of the South Atlantic States, while quite high, did not reach danger-line stages.

The highest and lowest water, mean stage, and monthly range at 132 river stations are given in Table XI. Hydrographs for typical points on seven principal rivers are shown on Chart V. The stations selected for charting are: Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.—*H. C. Frankenfield, Forecast Official.*

CLIMATE AND CROP SERVICE.

By JAMES BERRY, Chief of Climate and Crop Service Division.

The following extracts relating to the general weather conditions in the several States and Territories are taken from the monthly reports of the respective sections of the Climate and Crop Service. The name of the section director is given after each summary.

Rainfall is expressed in inches and temperature in degrees Fahrenheit.

Alabama.—The mean temperature was 76.4°, or about 2.0° below normal; the highest was 98°, at Brewton on the 30th, and the lowest, 58°, at Clanton on the 5th. The average precipitation was 11.08, or about 7.00 above normal; the greatest monthly amount, 26.67, occurred at Mobile, and the least, 5.55, at Marion.—*F. P. Chaffee.*

Arizona.—The mean temperature was 81.5°, or 0.5° above normal; the highest was 120°, at Texas Hill on the 27th, and the lowest, 30°, at Snowflake on the 3d. The average precipitation was 0.03, or 0.21 below normal; the greatest monthly amount, 0.72, occurred at Flagstaff, while none fell at a great number of stations.—*W. G. Burns.*

Arkansas.—The mean temperature was 76.6°, or 0.6° below normal; the highest was 100°, at Jonesboro on the 10th, and the lowest, 43°, at Witts Springs on the 4th. The average precipitation was 7.10, or 3.22 above normal; the greatest monthly amount, 16.11, occurred at Elon, and the least, 3.05, at Arkadelphia.—*E. B. Richards.*

California.—The mean temperature was 71.4°, or 0.9° above normal; the highest was 121°, at Salton on the 30th, and the lowest, 21°, at Bodie on the 16th. The average precipitation was 0.19, or 0.11 below normal; the greatest monthly amount, 2.67, occurred at Boca, while none fell at 61 stations.—*Alexander G. McAdie.*

Colorado.—The mean temperature was 65.2°, or 2.7° above normal; the highest was 107°, at Rogers Mesa on the 28th, and the lowest, 21°, at Wagonwheel Gap on the 4th and 15th. The average precipitation was 1.29, or about normal; the greatest monthly amount, 5.62, occurred at Wallet, and the least, trace, at Twinlakes.—*F. H. Brandenburg.*

Florida.—The mean temperature was 79.4°, or 0.5° below normal; the highest was 100°, at Ocala on the 28th, and the lowest, 58°, at St. Francis on the 2d. The average precipitation was 9.57, or 2.72 above normal; the greatest monthly amount, 17.94, occurred at Fort Meade, and the least, 2.90, at Jupiter.—*A. J. Mitchell.*

Georgia.—The mean temperature was 75.6°, or 1.9° below normal; the highest was 99°, at Fitzgerald on the 30th, and the lowest, 53°, at Dahlonega on the 22d. The average precipitation was 8.98, or 4.58 above normal; the greatest monthly amount, 15.88, occurred at Griffin, and the least, 2.95, at Lumpkin.—*J. B. Marbury.*

Idaho.—The mean temperature was 65.5°, or 4.4° above normal; the highest was 109°, at Hailey on the 22d, and the lowest, 24°, at Marysville on the 9th. The average precipitation was 0.52, or 0.31 below normal; the greatest monthly amount, 3.92, occurred at Murray, and the least, trace, at Downey.—*S. M. Blandford.*

Illinois.—The mean temperature was 71.0°, or 1.5° below normal; the highest was 95°, at Monmouth on the 7th, at Mount Pulaski on the 28th and at Palestine on the 29th, and the lowest, 39°, at Chemung on the 3d. The average precipitation was 4.28, or 0.07 above normal; the greatest monthly amount, 10.74, occurred at Raum, and the least, 0.42, at Knoxville.—*M. E. Blystone.*

Indiana.—The mean temperature was 71.1°, or 1.0° below normal; the highest was 99°, at Laporte on the 24th, and the lowest, 42°, at Logansport on the 2d. The average precipitation was 5.54, or 1.70 above normal; the greatest monthly amount, 14.31, occurred at Vincennes, and the least, 1.82, at Laporte.—*C. F. R. Wappenhans.*

Iowa.—The mean temperature was 69.7°, or about normal; the highest was 102°, at Odebolt on the 26th, and the lowest, 38°, at Larrabee on the 2d. The average precipitation was 3.98, or slightly below normal; the greatest monthly amount, 12.35, occurred at Mason City, and the least, 0.67, at Le Clair.—*J. R. Sage, Director; G. M. Chappel, Assistant.*

Kansas.—The mean temperature was 74.9°, or 1.1° above normal; the highest was 110°, at Ulysses on the 27th, and the lowest, 43°, at Scott on the 4th and at Achilles on the 8th. The average precipitation was 3.68, or 0.65 below normal; the greatest monthly amount, 10.30, occurred at Ottawa, and the least, 0.55, at Delphos.—*T. B. Jennings.*

Kentucky.—The mean temperature was 73.9°, or 0.9° below normal; the highest was 100°, at Fords Ferry on the 12th, and the lowest, 40°, at Vanceburg on the 4th. The average precipitation was 6.14 or 2.48 above normal; the greatest monthly amount, 13.31, occurred at Hopkinsville, and the least, 1.85, at Frankfort.—*H. B. Hersey.*

Louisiana.—The mean temperature was 79.3°, or nearly normal; the highest was 101°, at Libertyhill on the 17th, and the lowest, 60°, at Minden on the 22d and at Southern University Farm on the 25th. The average precipitation was 8.40, or 2.37 above normal; the greatest monthly amount, 17.61, occurred at Schriever, and the least, 3.81, at Plain Dealing.—*W. T. Blythe.*

Maryland and Delaware.—The mean temperature was 71.4°, or 0.3° above normal; the highest was 100°, at Hancock, Md., on the 11th, and the lowest, 36°, at Sunnyside, Md., on the 21st. The average precipitation was 4.75, or 1.60 above normal; the greatest monthly amount, 10.94, occurred at Washington, D. C., and the least, 1.48, at Sudlersville, Md.—*Oliver L. Fassig.*

Michigan.—The mean temperature was 63.3°, or 1.3° below normal; the highest was 96°, at Harrisville on the 26th, and the lowest, 22°, at Washington Harbor, Isle Royal, on the 3d and 9th; in the State proper the lowest temperature was 24°, at Humboldt, on the 8th. The average precipitation was 2.68, or 0.44 below normal; the greatest monthly amount, 5.10, occurred at Petoskey, and the least, 0.49, at Lincoln.—*C. F. Schneider.*

Minnesota.—The mean temperature was 66.8°, or 0.8° above normal; the highest was 102°, at Hallock on the 25th, and the lowest, 28°, at Pokegama on the 30th. The average precipitation was 1.71, or 2.28 below normal; the greatest monthly amount, 7.52, occurred at Milaca, and the least, 0.32, at Morris.—*T. S. Outram.*

Mississippi.—The mean temperature was 77.6°, or about 2.5° below normal; the highest was 99°, at Brookhaven on the 18th, and the lowest, 47°, at Louisville on the 3d. The average precipitation was 12.10, or about 7.85 above normal; the greatest monthly amount, 23.30, occurred at Americus, and the least, 5.50, at Natchez.—*H. E. Wilkinson.*

Missouri.—The mean temperature was 73.2°, or 0.5° below normal; the highest was 103°, at Sarcoxie on the 27th, and the lowest, 44°, at Bethany on the 11th. The average precipitation was 4.85, which is practically normal, but it was very unevenly distributed, portions of the central and eastern sections receiving much more than the usual amount, while over many of the northern and western counties there was a marked deficiency; the greatest monthly amount, 9.07, occurred at Gayoso, and the least, 1.12, at Bethany.—*A. E. Hackett.*

Montana.—The mean temperature was 65.6°, or 5.2° above normal; the highest was 109°, at Chinook on the 21st, and the lowest, 25°, at Adel on the 10th. The average precipitation was 1.01, or 1.89 below normal; the greatest monthly amount, 5.01, occurred at Dupuyer, while none fell at Crow Agency, Livingston, and Red Lodge.—*E. J. Glass.*

Nebraska.—The mean temperature was 72.5°, or 2.8° above normal; the highest was 110°, at Palmer on the 27th, and the lowest, 37°, at Fort Robinson on the 9th. The average precipitation was 2.50, or 1.35 below normal; the greatest monthly amount, 7.58, occurred at Weepingwater, and the least, 0.25, at Johnstown.—*G. A. Loveland.*

Nevada.—The mean temperature was 67.7°, or about 3.8° above normal; the highest was 111°, at Las Vegas on the 29th, and the lowest, 28°, at Palmetto on the 16th. The average precipitation was 0.32, or about 0.14 below normal; the greatest monthly amount, 1.08, occurred at Reno, while none fell at several stations.—*J. H. Smith.*

New England.—The mean temperature was 65.7°, or 0.8° above normal; the highest was 105°, at Bemis, Me., on the 1st, and the lowest,

32°, at Newton, N. H., on the 5th. The average precipitation was 2.74, or 0.14 below normal; the greatest monthly amount, 5.51, occurred at Farmington, Me., and the least, 0.63, at South Portsmouth, R. I.—*J. W. Smith.*

New Jersey.—The mean temperature was 70.4°, or 0.7° above normal; the highest was 97°, at Beverly and Vineland on the 27th, and the lowest, 39°, at Charlotteburg on the 5th. The average precipitation was 3.08, or 0.46 below normal; the greatest monthly amount, 4.91, occurred at Asbury Park, and the least, 1.10, at Rocktown.—*E. W. McGann.*

New Mexico.—The mean temperature was 71.2°, or 1.2° above normal; the highest was 111°, at Lyons Ranch on the 27th, and the lowest, 28°, at Winsors on the 5th. The average precipitation was 1.00, or 0.09 below normal; the greatest monthly amount, 4.67, occurred at Fort Union, while at Eagle, Lordsburg, and Rincon, none was recorded, and only a trace at Alma, Hillsboro, Los Lunas, Lyons Ranch, and Olio.—*R. M. Hardinge.*

New York.—The mean temperature was 66.6°, or 0.8° above normal; the highest was 96°, at Penn Yan on the 24th and 26th, at Ticonderoga on the 28th and at Primrose on the 29th; the lowest was 25°, at South Kortright on the 9th. The average precipitation was 2.63, or 0.88 below normal; the greatest monthly amount, 5.91, occurred at Ogdensburg, and the least, 0.75, at Nunda.—*R. G. Allen.*

North Carolina.—The mean temperature was 74.4°, or normal; the highest was 99°, at Tarboro on the 13th and at Southern Pines on the 29th, and the lowest, 45°, at Linville on the 20th. The average precipitation was 6.05, or 1.69 above normal; the greatest monthly amount, 19.92, occurred at Horse Cove, and the least, 1.02, at Currituck Inlet.—*C. F. von Herrmann.*

North Dakota.—The mean temperature was 66.9°, or 3.5° above normal; the highest was 109°, at Minto on the 23d, and the lowest, 27°, at Churchs Ferry on the 8th. The average precipitation was 1.39, or 1.30 below normal; the greatest monthly amount, 3.45, occurred at Napoleon, and the least, 0.27, at Mayville.—*B. H. Bronson.*

Ohio.—The mean temperature was 69.8°, or 0.5° below normal; the highest was 96°, at Annapolis on the 24th and at Norwalk on the 26th, and the lowest, 38°, at Colebrook and Garrettsville on the 30th. The average precipitation was 2.99, or 0.42 below normal; the greatest monthly amount, 6.64, occurred at New Paris, and the least, 0.81, at Ashtabula.—*J. Warren Smith.*

Oklahoma and Indian Territories.—The mean temperature was 77.7°, or 0.9° above normal; the highest was 106°, at Waukomis on the 27th, and the lowest, 50°, at Newkirk on the 14th. The average precipitation was 2.58, or 0.88 below normal; the greatest monthly amount, 7.18, occurred at Osage and the least, trace, at Healdton and Pauls Valley.—*C. M. Strong.*

Oregon.—The mean temperature was 63.5°, or 3.0° above normal; the highest was 103°, at Pendleton on the 20th, and the lowest, 24°, at Riverside on the 9th. The average precipitation was 2.17, or 0.50 above normal; the greatest monthly amount, 8.65, occurred at Nehalem, while none fell at Klamath Falls.—*E. A. Beals.*

Pennsylvania.—The mean temperature was 69.9°, or 1.0° above normal; the highest was 97°, at Irwin on the 24th, at Lockhaven on the 25th and at Athens on the 28th; the lowest, 35°, at Lawrenceville on the 30th. The average precipitation was 3.60, or slightly below normal; the greatest monthly amount, 10.29, occurred at Somerset, and the least, 1.35, at Coopersburg.—*L. M. Dey.*

South Carolina.—The mean temperature was 76.2°, or 1.9 below normal; the highest was 97°, at Yemassee on the 25th and 29th, and the lowest, 52°, at Georgetown on the 1st and 21st. The average precipitation was 7.94, or 3.41 above normal; the greatest monthly amount, 15.43, occurred at Holland, and the least, 4.15, at Trenton.—*J. W. Bauer.*

South Dakota.—The mean temperature was 69.4°, or about 2.0° above normal; the highest was 109°, at Interior on the 30th, and the lowest, 28°, at St. Lawrence on the 2d. The average precipitation was 2.40, or about 1.38 below normal; the greatest monthly amount, 6.90, occurred at Gannvalley, and the least, 0.11, at Ipswich.—*S. W. Glenn.*

Tennessee.—The mean temperature was 74.1°, or 0.9 below normal; the highest was 95°, at Madison on the 10th, and the lowest, 40°, at Andersonville on the 3d. The average precipitation was 9.84, or 5.14 above normal; the greatest monthly amount, 17.93, occurred at Hohenwald, and the least, 2.26, at Bristol.—*H. C. Bate.*

Texas.—The mean temperature, determined by comparison of 45 stations distributed throughout the State, was 1.9° above the normal. Nearly normal conditions prevailed along the coast, over southwest Texas, and the panhandle, while there was a general excess over the other portions of the State, ranging from 1.0 to 4.8, with the greatest in the vicinity of Tyler. The highest was 108°, at Colorado on the 17th and at Brownwood on the 26th, and the lowest, 53°, at Amarillo on the 1st. The average precipitation, determined by comparison of 54 stations distributed throughout the State, was 1.69 below normal. There was an excess, ranging from 1.00 to 8.96, over the extreme eastern portion of the State and in the vicinity of Cuero and Henrietta, with the greatest in the vicinity of Beaumont, while there was a general deficiency over the other portions of the State, with the greatest, 4.46, at Temple. The rainfall for the month was very unevenly distributed, there being comparatively none in localities over central Texas, while heavy rains occurred over the eastern portion of the State. The greatest monthly amount, 12.70, occurred at Beaumont, while none fell at Beeville, San Marcos, and Temple.—*I. M. Cline.*

Utah.—The mean temperature was 69.7°, or 4.8° above normal; the highest was 111°, at Hite on the 28th, and the lowest, 30°, at Henefer on the 11th and at Tropic on the 15th and 16th. The average precipitation was 0.16, or 0.27 below normal; the greatest monthly amount, 1.00, occurred at Holyoake; none fell at Kelton and 6 additional stations, while a number of stations received but a trace.—*L. H. Murdoch.*

Virginia.—The mean temperature was 72.5°, or 0.5° above normal; the highest was 101°, at Doswell on the 30th, and the lowest, 42°, at Meadowdale on the 20th. The average precipitation was 4.61, or 1.83 above normal; the greatest monthly amount, 8.87, occurred at Christianburg, and the least, 0.65, at Birdsnest.—*E. A. Evans.*

Washington.—The mean temperature was 62.9°, or 3.8° above normal; the highest was 102°, at Mottingers Ranch on the 20th, and the lowest, 31°, at Republic on the 6th and at Cle-Elum, Colville, and Rosalia on the 9th. The average precipitation was 2.51, or 0.96 above normal; the greatest monthly amount, 13.92, occurred at Clearwater, and the least, trace, at Cheney.—*G. N. Salisbury.*

West Virginia.—The mean temperature was 71.2°, or 0.9° above normal; the highest was 98°, at Oldfields on the 11th, and the lowest, 41°, at Philippi on the 1st. The average precipitation was 5.30, or 0.69 above normal; the greatest monthly amount, 15.62, occurred at Chapel, and the least, 2.49, at Southside.—*E. C. Vose.*

Wisconsin.—The mean temperature was 65.5°, or 0.8° below normal; the highest was 103°, at Medford on the 19th, and the lowest, 28°, at Barron on the 11th. The average precipitation was 2.01, or 2.33 below normal; the greatest monthly amount, 3.70, occurred at Koepenick, and the least, 0.57, at Spooner.—*W. M. Wilson.*

Wyoming.—The mean temperature was 66.0°, or 5.8° above normal; the highest was 116°, at Bittercreek on the 26th, and the lowest, 22°, at Thayne on the 10th. The average precipitation was 0.47, or 1.07 below normal; the greatest monthly amount, 1.31, occurred at Fort Laramie, and the least, trace, at Alcora, Bedford, Bittercreek, and Burlington.—*W. S. Palmer.*

SPECIAL CONTRIBUTIONS.

EXTENSION OF WEATHER BUREAU WORK.

By E. B. GARRIOTT, Professor of Meteorology.

A recent report on the system of hurricane warnings in the West Indies, by Mr. Wm. B. Stockman, Forecast Official in charge of the United States Weather Bureau at Havana, Cuba, suggests the following comments on recent extensions of the work of the Weather Bureau:

The West Indian branch of the United States Weather Bureau was established in the summer of 1898, as an emergency measure for providing the United States fleets and the merchant marine in West Indian waters with timely notice of approaching hurricanes. The unquestioned value of this information to the maritime and commercial interests has led to the establishment, on a permanent basis, of a service in the West Indies, the province of which is to give warning to all interests concerned, of the approach of tropical storms of a destructive character, and to collect data and issue reports on the climate and crops of the islands of Cuba and Puerto Rico.

During the present hurricane season practically all of the cable islands and ports of the West Indies and the Caribbean coast of South America receive advices regarding tropical storms at the expense of the United States, and this information is given effective distribution, and is bulletined and exposed in conspicuous places for the benefit of the public.

The central station of the West Indian service is located at Havana, Cuba, where telegraph and cable reports of meteorological observations taken at Weather Bureau West Indian

stations are received during the hurricane season, and advices regarding disturbances are prepared for transmittal to the various islands of the West Indies. The observational data thus collected are promptly telegraphed to the Central Office of the Weather Bureau at Washington, D. C., together with warnings or advices that may have been issued.

The West Indian observation stations, which are regularly equipped and officered by the Weather Bureau, number thirteen, and provision has been made for ordering and displaying, through these stations, hurricane warnings at more than one hundred points in the West Indies. The distribution of hurricane information and advices throughout the West Indies is limited only by the telegraphic and messenger services possessed by the several islands.

During the summer of 1899 reports by telegraph were begun from well-distributed Mexican stations. These reports are furnished through the cooperation and courtesy of the Director General of the federal telegraph lines of Mexico, who delivers them (free of expense to the United States) to the official in charge of the Weather Bureau office at Galveston, Tex., who, in turn, promptly transmits them by telegraph to Washington. Credit for arranging the plan of exchange of meteorological reports between the United States and Mexico is in a large measure due to Dr. I. M. Cline, official in charge of the Weather Bureau office at Galveston.

The Central Office of the Weather Bureau at Washington now has for its consideration reports from an area which extends from the South American coast to northern Canada, a region whose extreme limits cover latitude 11° to 53° north, and longitude 60° to 125° west, or more than 42° of latitude and 65° of longitude.

The advantage afforded by this great area of telegraphic observations can scarcely be estimated. By means of the West Indian reports the tropical storms which cross the more eastern islands of that group can be detected almost in their inception. They can be traced day by day, and the probable time of their arrival at any point in their line of advance can be forecast.

By means of the Mexican Gulf coast reports the development of storms near the Yucatan and Mexican coasts can be detected, and the course of West Indian storms which cross the Gulf of Mexico can be determined. These reports furnish information which render possible warnings of the severe cold waves and northerly gales which visit the Gulf districts of Mexico during the winter months. It is believed that the reports received from northern and western parts of Mexico will lead to a better understanding of the important storms which sweep northeastward from the tropical Pacific over northern Mexico and cross the United States from the Rio Grande and southern Rocky Mountain districts to the Atlantic.

Reports from the extreme British Northwest Territory, which have been added within the last two years, have furnished valuable data regarding the movements of north Pacific storms, and will contribute to present knowledge of the mechanism of the severe cold waves which appear in that region.

The extensions referred to constitute one of the most substantial advances in the history of the Weather Bureau. The telegraphed reports afford daily and twice daily meteorological surveys of the populated parts of North America and a great part of Central America and adjacent waters, by means of which weather changes and conditions calculated to benefit or injure maritime or commercial interests can be forseen. And it is believed that each extension of the area of observation brings nearer that desideratum of meteorologists—long range forecasts. When this area shall have been extended to even partly include the great oceanic permanent cyclones and anticyclones the science of meteorology will advance from a knowledge of effects to a more perfect understanding of one of the causes thereof.

OBSERVATIONS AT HONOLULU.

Through the kind cooperation of Mr. Curtis J. Lyons, Meteorologist to the Government Survey, the monthly report of meteorological conditions at Honolulu is now made partly in accordance with the new form, No. 1040, and the arrangement of the columns, therefore, differs from those previously published.

Meteorological observations at Honolulu, June, 1900.

The station is at 21° 18′ N., 157° 50′ W.

Hawaiian standard time is 10h 30m slow of Greenwich time. Honolulu local mean time is 10h 31m slow of Greenwich.

Pressure is corrected for temperature and reduced to sea level, and the gravity correction, —0.06, has been applied.

The average direction and force of the wind and the average cloudiness for the whole day are given unless they have varied more than usual, in which case the extremes are given. The scale of wind force is 0 to 12, or Beaufort scale. Two directions of wind, or values of wind force or amounts of cloudiness, connected by a dash, indicate change from one to the other.

The rainfall for twenty-four hours has always been measured at 9 a. m. local or 7:31 p. m. (not 1 p. m.), Greenwich time, on the respective dates.

The rain gage, 8 inches in diameter, is 1 foot above ground. Thermometer, 9 feet above ground. Ground is 43 feet, and the barometer 50 feet above sea level.

Date.	Pressure at sea level.	Temperature.		During twenty-four hours preceding 1 p. m. Greenwich time, or 2:30 a. m., Honolulu time.									Total rainfall at 9 a. m., local time.
				Temperature.		Means.		Wind.		Average cloudiness.	Sea-level pressures.		
		Dry bulb.	Wet bulb.	Maximum.	Minimum.	Dew-point.	Relative humidity.	Prevailing direction.	Force.		Maximum.	Minimum.	
	*	†	†			‡	‡		§				
1	29.96	73	68.5	83	74	64.5	67	ne.	3	3	30.01	29.95	0.05
2	29.97	73	67.5	82	72	66.0	71	ne.	4	3	30.00	29.94	0.03
3	29.97	69	67.5	83	72	65.0	67	ne.	4-1	5	30.03	29.94	0.08
4	30.00	67	64	83	68	65.3	72	ene.	1-5	5-2	30.03	29.95	0.00
5	29.99	68	66	83	67	64.7	70	ne.	3	3	30.05	29.96	0.00
6	30.00	74	69	85	67	67.7	78	sw-n.	2-4	1-4	30.04	29.97	0.00
7	29.99	74	67.5	85	72	66.3	66	ne.	3	1	30.04	29.96	0.00
8	30.00	75	69	85	69	64.5	65	ne-nne.	3	1	30.04	29.95	0.00
9	30.03	72	67	85	73	64.7	63	ne.	3	2-5	30.06	30.00	0.00
10	29.97	67	64.5	84	72	64.0	66	ne.	4-1	3-1	30.05	29.96	0.00
11	29.94	71	67	85	67	62.3	65	nne.	3-0	1-0	30.01	29.94	0.00
12	29.91	71	69	86	69	67.0	72	ne.	2-0	4	29.97	29.88	0.05
13	29.87	74	70.5	82	70	68.0	78	ne.	3	5	29.92	29.86	0.00
14	29.92	75	69	85	72	67.7	71	ene.	3	5	29.94	29.86	0.00
15	29.94	76	68.5	86	74	65.5	64	nne.	3-4	1-4	29.98	29.90	0.00
16	29.98	75	68.5	85	75	66.0	65	ne.	4	2-5	30.01	29.96	0.06
17	29.98	77	70.5	85	74	65.5	64	ene.	4	3	30.01	29.96	0.01
18	30.00	76	69	86	76	67.0	65	ne.	3	3	30.02	29.95	0.01
19	30.03	72	67	86	73	63.7	60	nne.	3	1-0	30.06	29.98	0.00
20	30.03	75	68	86	70	63.5	62	ne.	3	3-1	30.08	30.02	0.00
21	30.05	76	68.5	85	70	64.3	62	ne.	3	3	30.07	30.00	0.00
22	30.02	75	69.5	86	75	65.5	63	ne.	3	3-6	30.09	29.99	0.00
23	30.01	75	72.5	88	75	67.3	66	ne.	2	1-4	30.07	29.90	0.04
24	30.02	77	69.5	84	75	70.3	78	ne.	2	5	30.07	30.00	0.00
25	30.02	74	70	86	75	65.7	64	ne.	2	1	30.07	29.99	0.04
26	29.99	76	68	85	73	68.0	73	nne.	1-3-0	3-1-7	30.05	29.98	0.03
27	29.98	75	70.5	85	72	65.7	67	ne.	2-5	3	30.04	29.98	0.40
28	29.97	76	70	82	72	68.3	76	ne.	2-4	7-3	30.02	29.96	0.05
29	29.97	77	70	84	75	68.0	73	ne.	4	3	30.01	29.94	0.01
30	29.99	77	70	85	77	67.0	65	ne.	3.5	3	30.03	29.96	0.02
Sums	......	......	......	......	......	......	......	......	......	......	......	......	0.88
Means	29.983	73.7	68.3	84.7	72.2	66.0	68.0	......	3.0	3.1	30.029	29.956	......
Departure	—0.02	......	......	......	......	+0.5	—2.6	......	......	—0.9	......	......	—0.72

Mean temperature for June, 1900 (6+2+9) + 3=77.6°; normal is 75.9°. Mean pressure for June (9+3) + 2 is 29.991; normal is 30.012.

*This pressure is as recorded at 1 p. m., Greenwich time. †These temperatures are observed at 6 a. m., local, or 4:31 p. m., Greenwich time. ‡These values are the means of (6+9+2+9) + 4. §Beaufort scale.

RAINFALL AND DRAINAGE IN THE UPPER CHAGRES RIVER.

By Gen. HENRY L. ABBOT, dated July 10, 1900.

During the past year the matter of rainfall and drainage on the Isthmus of Panama has received special study. The following results are translated from my original paper compiled for the Compagnie Nouvelle and are communicated to the MONTHLY WEATHER REVIEW as being of general interest.

There are some small differences between the inclosed figures and those formerly sent, caused by errors in the report of rainfall first received from the Isthmus, but fortunately they are of no importance.

The Valley of the Chagres above Bohio may be divided into three subbasins, of which the general dimensions are given in the following table. The figures for the upper basin are only approximate, as toward the southern side the divide has not been accurately defined by surveys; but no material error is believed to exist. The two lower basins are well determined.

The upper basin includes the most mountainous district. About 7 miles above Alhajuela the principal stream takes the name of Pequini, and heads within about a dozen miles of the Atlantic coast, where the rainfall is greatest. It is from this region that the river receives its chief contributions, especially during the dry season; but during the eight months of rains the lower tributaries considerably increase the volume.

Geographical details of the basin of the Chagres.

Subbasins.	Area.		Length.	Width.	Length of channel.	Number of tributaries (about).
	Square miles.	Per cent.				
			Miles.	*Miles.*	*Miles.*	
Bohio-Camboa	250	37	11	23	19.5	17
Gamboa-Alhuela	130	19	7	18	11.0	15
Above Alhuela	290	44	18	16	31.0	?
Total	670	100	....	....	61.5	....

The discharge of the river was accurately determined during the past year from the automatic registers of the three gages at Bohio, Gamboa, and Alhajuela, and rating tables based on many hundred careful measurements were compiled. The water heights were taken every two hours to correct for any small changes of level in the torrential stream.

The daily rainfall was observed at Bohio, Gamboa, Alhajuela, and Colon. There is reason to believe that the rainfall at the latter measures quite approximately the precipitation near the sources of the Chagres, as both are situated near the Atlantic coast and not remote from each other.

Considering the limited areas and compact form of the three subbasins, it is not a violent assumption that the average precipitation for the lower subbasin may be estimated by the mean between that measured at Bohio and Gamboa; for the intermediate, by the mean between that measured at Gamboa and Alhajuela; and for the upper, by the mean between that measured at Alhajuela and Colon. Admitting this assumption, the numerical value of the desired ratio between downfall and drainage for the entire basin above Bohio results from the following formula. Similar expressions for the entire basin above Gamboa and for each subbasin are readily deduced. In the formula, Q denotes the discharge at Bohio in cubic metres per second; D, the number of days considered; B, G, A, and C, the rainfall at Bohio, Gamboa, Alhajuela, and Colon in metres; and R, the desired ratio for the days considered.

$$R = \frac{Q \times 3600 \times 24 \times D}{1610^2 \times \left(\frac{250\,(B+G)}{2} + \frac{130\,(G+A)}{2} + \frac{290\,(A+C)}{2}\right)}$$

Although the variable nature of the ratio between downfall and drainage is well known, depending on the character of the storms, the condition of the soil as to moisture and geological formation, the forest growth, and many other local peculiarities, it is not too much to assume that for a single month the variation will be confined to narrow limits in a valley like that of the Chagres. Its numerical value may be found from the above formula by substituting the mean discharge per second at Bohio for Q; the number of days in the month for D; and the respective rainfall for B, G, A, C. The following table exhibits the results obtained from the observations of the past year, conducted with every care to secure accuracy, by the New Panama Canal Company:

Ratio between rainfall and drainage above Bohio.

Month.	Above—		Subbasin.			Former values (7 years) above—	
	Bohio.	Gamboa.	Upper.	Intermediate.	Lower.	Bohio	Gamboa.
1899.							
July	0.44	0.46	0.45	0.50	0.38	0.58	0.65
August	0.84	0.99	1.04	0.80	0.57	0.70	0.64
September	0.61	0.71	0.75	0.62	0.42	0.80	0.63
October	0.65	0.73	0.88	0.59	0.52	0.94	0.86
November	0.81	0.85	0.39	0.72	0.73	0.87	0.77
December	1.39	1.63	1.64	1.51	0.99	1.08	0.99
1900.							
January	1.04	1.47	1.60	0.66	0.48	2.07	2.41
February	7.41	12.00	15.50	*	3.27	1.39	1.97
March	2.63	3.36	3.56	*	1.71	1.15	1.48
April	0.41	0.54	0.90	*	0.21	0.46	0.54
May	0.30	0.36	0.48	*	0.18	0.50	0.58
June	....	....	....	....	....	0.54	0.57

*No outflow.

The figures in the last two columns are added for comparison, although being based only on the discharges actually measured, and on the assumption that the rainfall at Colon measured that in the upper subbasin, where no rain measurements were then made, they are less trustworthy than those of the past year.

Without wishing to attach too much value to the exact figures in this table, it is to be remarked that they generally conform to known conditions in the several months, and accord well with each other. For example, in August and November some rather large freshets occurred, which should and did increase the ratios for those months; but in July, September, and October, when the discharge was less variable, the ratios fell, as they should have done. In leaving the hills and entering the more level district, the ratios become less, as is usually the case.

But the most important and most striking fact developed by these investigations is the exaggerated values of these ratios in the months of little or no rainfall, of which December, 1899, was one. This supplementary volume could only be ground water. For example, in February the rainfall at Bohio was only 0.47 inch; at Gamboa, 0.16; at Alhajuela, 0.04, and at Colon, 0.35. Nevertheless, after two months of previous drought, the average monthly discharge at Bohio was 1,060 cubic feet per second; at Gamboa, 812; and at Alhajuela, the same (812). This water could only have issued from the ground. It is a phenomenon common in the United States. The tributaries of the right bank of the Allegheny River drain a district of glacial drift, while those of the left bank issue from more impermeable soil. In times of severe drought the former often afford a fair discharge while the latter run nearly dry.

That the Chagres belongs to this class of streams is a matter of no small importance for the canal. It gives the explanation of the well-known fact that no fear of a lack of water in the dry season need be entertained with the reserves contemplated by the new company.

CLOUD-BURST AT ERWIN, TENN.

By S. G. WORTH.

The following communication from Mr. S. G. Worth, Superintendent of the United States Fish Commission station at Erwin, Tenn., dated October 13, 1898, relates to an unusual rainfall in that vicinity on August 12, 1898. The Weather Bureau did not have a gage very near this cloud-

burst, but heavy local rains were reported at surrounding stations.

In this connection I wish to advise you that the streams of this immediate vicinity are now in an abnormal state in consequence of the heavy rain which occurred here on August 12. From what I have seen of these streams I am confident that it will be two or three years before the normal (animal) forms become restored. The downpour of rain was greater than had been known here before in 20 or 30 years, and the beds of the streams were completely scoured of all loose material and now consists simply of round boulder rocks. Millions of forms, both large and small, must have been destroyed at that time. On the 26th of September, while taking a day's leave of absence, I went into the headwaters of one of the largest creeks near here for a day's outing and was completely astonished at the torn up condition of the mountain sides. I had never before witnessed the work of a so-called cloud-burst, but after that day's observation I came to the conclusion that if the Weather Bureau had an adequate conception of the destruction in this vicinity, in that rain, they would probably send a man out here to look over the ground and make a report upon it.

At the point where the cloud-burst occurred the ground was torn up a width of 15 to 30 feet and from 100 to 300 yards in length up and down the mountain side. At the bottom of the mountain slope there were evidences of a violent rush of water, mud, and hundreds of tons of loose rock, stumps, and fallen timber. On Rock Creek, and especially on Martins Creek, the disaster wrought by the storm was phenomenal and something beyond my imagination until I had witnessed it myself. The scars made on the mountain sides can be seen several miles distant.

THE SEISMOGRAPH AT THE OBSERVATORY AT CARSON CITY, NEV.

By C. W. FRIEND, Director of the Observatory.

The seismograph stands on a solid foundation that is about even with the surface of the ground. It is of the pattern known as the duplex-pendulum seismograph. A massive bob is hung by three parallel wires from the top of the three-cornered box, and is reduced to nearly neutral equilibrium by being coupled by a ball-and-tube joint to the bob of an inverted pendulum below it. The two form a system which can be made as nearly astatic as is desirable, and so furnish a suitable steady-point for showing the horizontal component of earthquake movement in any azimuth. The motion is magnified (in the observatory seismograph about four and a half times), and recorded by a vertical lever geared to the upper bob by a ball-and-tube joint, supported on gimballs from a bracket fixed to the box, and furnished with a jointed index, which writes on a fixed plate of smoked glass.

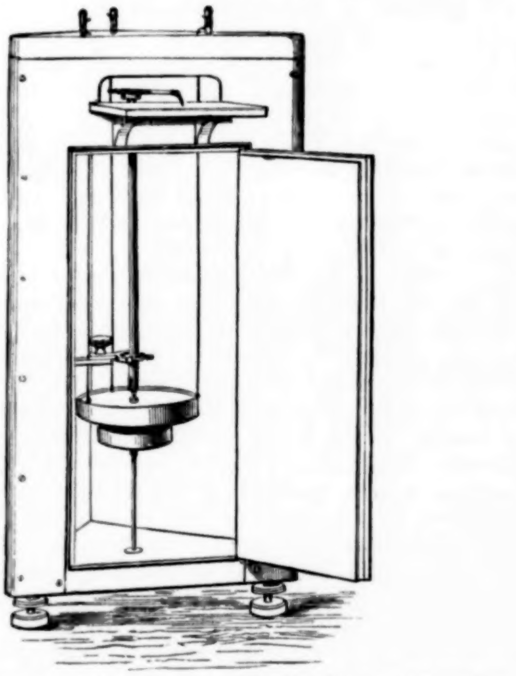

FIG. 1.—Duplex-pendulum seismograph for horizontal motion.

MEXICAN CLIMATOLOGICAL DATA.

Through the kind cooperation of Señor Manuel E. Pastrana, Director of the Central Meteorologic-Magnetic Observatory, the monthly summaries of Mexican data are now communicated in manuscript, in advance of their publication in the Boletin Mensual. An abstract, translated into English measures, is here given, in continuation of the similar tables published in the MONTHLY WEATHER REVIEW since 1896. The barometric means have not been reduced to standard gravity, but this correction will be given at some future date when the pressures are published on our Chart IV.

Mexican data for June, 1900.

Stations.	Altitude.	Mean barometer.	Temperature.			Relative humidity.	Precipitation.	Prevailing direction.	
			Max.	Min.	Mean.			Wind.	Cloud.
	Feet.	*Inch.*	°*F.*	°*F.*	°*F.*	%	*Inch.*		
Durango (Seminario)	6,243	24.03	99.5	48.2	74.5	43	0.67	wsw.	sw.
Leon (Guanajuato)...	5,934	24.27	92.5	56.5	74.5	47	1.51	ne.	ne.
Mexico (Obs. Cent.)..	7,472	23.05	84.2	51.8	66.6	50	1.20	n.	ne.
Morelia (Seminario)..	6,401	23.96	87.4	56.5	71.1	66	5.27	s.	ene.
Puebla (Col. Cat.)....	7,112	23.36	86.5	50.5	69.4	59	4.38	ene.	ne.
Puebla (Col d. E.)...	2,169	23.33	86.9	51.1	68.4	58	3.78	ene.	ne.
Real del Monte... ...	9,095	21.63	74.1	39.9	57.0	......	4.31	n.	....
Saltillo (Col. S. Juan).	5,399	24.75	91.6	60.6	76.1	53	0.48	n.	w.
San Isidro (Hac. de Guanajuato)	....	....	85.1	69.8	......	......	3.76	ne.	....
San José del Cavo (B. C.)...............	......	....	90.0	77.0	83.8	......	......	s.	n.
Silao	6,063	24.22	90.1	62.6	75.4	50	3.28	se.	ese.
Queretaro...........	6,070	24.18	93.2	56.7	72.9	46	1.30	e.	....

RECENT PAPERS BEARING ON METEOROLOGY.

W. F. R. PHILLIPS, in charge of Library, etc.

The subjoined list of titles has been selected from the contents of the periodicals and serials recently received in the library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau:

Comptes Rendus. Paris. Tome 130.
 Violle, J. Observations actinométriques pendant l'éclipse du 28 mai, 1900. P. 1658.
La Nature. Paris. 28me Année.
 Plumandon, J. R. La pluie à Nice. P. 75.
Technology Quarterly. Boston. V. 13.
 Rotch, A. L. Use of Kites to obtain Meteorological Observations. P. 89.
Das Wetter. Berlin. 17 *Jahrg.*
 Muttrich, ——. Ueber die Einrichtung von meteorologischen Stationen zur Erforschung der Einwirkung des Waldes auf das Klima. P. 121.
 Pernter, J. M. Wetterschiessen. P. 134.
Scientific American Supplement. New York. Vol. 50.
 McAdie, A. G. Frost Fighting. P. 20512.
Geographical Journal. London. Vol. 16.
 Arctowski, H. Observations on the Aurora Australis. P. 92.
L'Aerophile. Paris. 8me Année.
 Vincent, J. L'emploi des cerfs-volants en météorologie. P. 63.
Philosophical Magazine. London. Vol. 50.
 Wood, R. W. Photography of Sound-Waves, and the Kinematographic Demonstration of the Evolutions of Reflected Wave-Fronts. P. 148.
Gaea. Leipzig. 36 *Jahrg.*
 Klein, H. J. Wetterprognosen auf mehrere Tage und die täglichen Wetterkarten. P. 475.
Comptes Rendus. Paris. Tome 131.
 Gautier, A. Gaz combustibles de l'air; air des bois; air des hautes montagnes. P. 13.
 Gautier, A. Gaz combustibles de l'air; air de la mer. Existence de l'hydrogène libre dans l'atmosphère terrestre. P. 86.
 Poncare, A. Combinaison des effets des révolutions synodique et tropique; son action sur la marche des dépressions. P. 132.

Popular Science Monthly. New York. Vol. 57.
Wood, R. W. Photography of Sound Waves. P. 354.
Aeronautical Journal. London. Vol. 4.
Wenham, F. H. On Forms of Surfaces impelled through the Air and their Effects in Sustaining Weights. P. 134.

DROUGHTS, FAMINES, AND FORECASTS IN INDIA.[1]

By E. Douglas Archibald.

The famine, which has now for the last two years been devastating India, is a matter of such serious importance in relation to the economy of Indian government and to the rapidly increasing population, that no excuse is needed for discussing in these pages the general causes of Indian famines and their relation to the prevision of Indian weather.

The general causes of Indian famine have been summarized by Mr. Eliot, the head of the Indian Meteorological Service, as follows:

1. Prolonged delay in the commencement of the rains, more especially of the summer monsoon.
2. A prolonged break in the middle of the southwest monsoon rains.
3. Scanty rainfall during the greater part or the whole of the season.
4. Unusually early termination of the southwest monsoon rains.

This last being especially fatal in the case of rice crops on unirrigated land.

In different parts of India these several factors work very differently.

Thus in northern India, which comes under the incidence of both the southwest monsoon or summer rains, and of the comparatively minute but valuable fall in the winter months, famine is usually due either to the failure of two crops in succession, the "Khariff" or summer crop and the "rabi" or winter crop, or to the complete failure of one crop after a succession of poor or bad seasons.

In the Deccan they are usually due to the more or less complete failure of the southwest monsoon rainfall throughout.

In general, it may be said that failure of either the summer or winter rains, or both together, tend to produce famine in proportion to the intensity of the drought, the time of its duration and the area over which it extends. An untimely excess of rainfall seldom produces more than a local scarcity.

One very curious circumstance in regard to the prevalence of famine in India is that the area most subject to famine is not the most arid district, but a zone intermediate between this and the moister areas, which is technically designated as "dry."

Statistically, India may be divided into three areas (1) the arid area with a rainfall less than 15 inches *per annum.* Since all crops grown on this area are watered by irrigation it is practically independent of variation in the seasonal rainfall, and it is a nonfamine area.

2. The dry area, in which the annual rainfall ranges from 15 to 35 inches. This is the real famine area, and on the map appears as two great areas, one in central and southern India embracing the Deccan, Mysore, south Madras, and the other a belt stretching in the form of a boomerang from the Gujrat Peninsula northeastward to Lucknow and Allahabad, and thence northeastward to Peshawar.

In time of severe famines such as the present, when the conditions in both areas are coincidently prolonged, the famine area embraces both at once and extends more or less symmetrically over the areas adjoining their borders.

3. The moist zone, in which the rainfall ranges from 35 inches to 200 inches and upward. This area, which includes the rest of India, is practically a nonfamine area.

Various attempts have been made to correlate the occurrence of Indian famines with the variations in the energy derived from the sun corresponding to the periodic changes in the spotted area; but, though there are evidences of parallelism, the relation is not a simple or regular one. The condition of the sun is probably a contributory *vera causa*, but not a *maxima causa*.

Reacting conditions, initially determined by changes in the position of antarctic ice, slight deflections in the equatorial ocean currents and in the vertical and horizontal position of upper atmospheric air streams of abnormal condition, such as those recently shown to exist by means of the kite observations at Blue Hill Observatory, are likely to be far more potent prime causes of seasonal abnormals than the small and fairly regular changes which appear to follow the appearance and disappearance of sun spots.

In fact, the study of famine prevision can only proceed successfully with that of the general terrestrial factors which lie at the base of the normal and abnormal occurrence of the monsoons.

The comparative regularity with which these periods of similar winds and weather alternate half-yearly is one of the most salient and remarkable features of the Indian weather system, and the study of their proximate and remote causes, their changes from year to year, and their general local distribution of rainfall, have for several years formed the "*maxima quæstio*" of the Indian forecaster.

For the purpose of prediction, the American or European and the Indian meteorologist regard weather from entirely different points of view.

To the former it appears to be mainly due to the passage of a succession of low and high pressure areas (technically termed cyclones and anticyclones), with their attendant respective characteristics of ephemeral stormy and fair weather.

To the Indian meteorologist, on the other hand, it appears to be chiefly a succession of broad seasonal changes, commencing suddenly in the case of the summer monsoon, and, though characterized by minor changes due to the similar passage of ephemeral moving cyclonic and anticyclonic systems, it remains of a fairly constant and dominant type when once it has fairly set in.

The marked changes from day to day which characterize the proverbially "fickle weather" in England are less marked in that of India, while the persistent seasonal tone of the latter is comparatively unnoticed, even if present in the former.

This apparently radical difference between the weather in India and that of extratropical countries has led to an equally radical departure in the system of forecasting adopted there.

While in England and Europe we are still content with twenty-four hourly predictions, founded chiefly on mere empirical sequences of changes already in existence, and in America the utmost limit at present adopted is forty-eight hours, India has boldly struck out into officially indorsed predictions, issued in May and November, of the average weather of the ensuing half year.

The success of the forecasts which have now been in operation for the last twelve years, has been such that in spite of its well-known financial difficulties, the Indian government has recently extended its field of observation so as to embrace portions of Persia, Kashmir, Arabia, east Africa, Mauritius, and communication with west Australia, and with good reason, for as the investigation of the conditions upon which the initiation and persistence of the monsoons depend proceeded, it was found that the local factors, such as early hot weather in the plains, or late snowfalls on the Himalaya, were insufficient to account for the large anomalies presented in different years, and that extraneous causes were at work in surrounding areas which dominated and often masked any apparent temporal coincidences such as were too readily accepted in the early period of Indian meteorology as sufficient to account for everything.

[1] Reprinted from Symons's Monthly Meteorological Magazine for June and July, 1900.

With regard to yearly anomalies in the monsoon and their rainfall, it appears to be a common delusion among those who are unacquainted with India, to imagine them to be extremely regular, both as to date of arrival and character, thus rendering their prediction a comparatively simple matter. This however, is far from being the case. Even taking India as a whole, the marked date of the burst of the southwest monsoon varies occasionally as much as from three weeks to thirty days, while the total annual rainfall of the entire Indian area has varied from 6.5 inches deficiency in 1868, to 9 inches excess in 1893. Concentrated in one spot this latter surplus would amount to 211 cubic miles of water. Let me give an illustration by which it may be brought home to the imagination. Suppose a gigantic hose pipe half an acre in section to stretch from the earth to the moon, and to be filled with water. This water would barely represent the excess of 9 inches rainfall spread over the Indian area, while if it were required to irrigate India by the hose pipe so as to allow the water poured out to amount to the given excess at the end of the six months of the southwest monsoon, it would have to be continuously projected from the hose with the enormous velocity of 55 miles per hour. Such variations of water supply can hardly be regarded as an insignificant variation from the annual average. It has, morever, been established by the late Mr. Blanford, that while the average rainfall variation over the whole area is not more than from 15 to 20 per cent, the rainfall is most variable when it is smallest in amount, and most regular and steady when it is greatest; so that in certain regions variations occur of several hundred per cent, leading to disastrous floods or droughts, especially in the dry zone.

Prevision of such anomalies in time to warn the local governments and agriculturists of impending unfavorable seasons, and possible scarcity and famine, through either drought or flood, is the principal aim of the Indian seasonal forecasts.

The method began under Mr. Blanford by the recognition of certain contrasts and sequences between the rainfall of the summer and winter seasons, and in particular the snowfall on the Himalaya, and the character of the subsequent summer monsoon over the neighboring plains. This was found to be inverse, so that a heavy snowfall, especially if it lasted well into the spring months, argued a deficient or retarded monsoon.

Though this factor is now found to be subordinate to the absolute strength of the monsoon current, it still forms one of the four main conditions from which the extension and character of the southwest monsoon is inferred. The others are:

2. The local peculiarities of the weather during the months immediately preceding the arrival of the monsoon, and which are best indicated by local variations of monthly barometric pressure from the normal.

3. The absolute force of the southeast trade wind in the south Indian Ocean before it breaks through the belt of equatorial calms and appears in the Indian seas as a southwest monsoon wind, and which at present can only be determined from the logs of ships traversing the Indian Ocean or by cable from the Seychelles and Mauritius.

4. The occurrence of long-period waves of barometric pressure (variations from the normal for the whole area), and in particular whether the wave is rising or falling. If rising, the probability is that the monsoon will be deficient; if falling, that it will be strong and rainy.

The second of these conditions used to be considered the only one which determined the monsoons, but is now found to be chiefly useful in determining the local character and irregularities of the monsoonal rains; in other words, the pressure differences act much as the inequalities in a mould into which molten lead is poured, in determining its flow and aggregation.

While the general troughs and ridges of pressure alter considerably from year to year, they always tend to preserve their initial type all through the monsoon period. Besides these, certain local sinks or barometric hollows which are associated with locally heavy downpours, appear to persist or recur several years in succession in the same locality.

A knowledge of the two last conditions, 3 and 4, is now recognized as displacing that of every other condition in point of primary importance in determining the strength and character of the southwest monsoon current.

The first two conditions are now chiefly used in determining the local behavior and limits of the current when it has once developed over the Indian area; and since such behavior is considerably modified by the strength of the current itself, their role is obviously subordinate to that of any means by which the strength of the current may be forecasted shortly before it invades the Indian land area.

As yet (3) can not be directly determined by any rational method of scientific deduction. Recent investigations, however, by the aid of the ample data which is now collected at the Indian ports from ships traversing the Indian Ocean, and embodied in a series of monsoon charts, show that during the prevalence of the southwest monsoon the equatorial calm belt where, according to the old text-book theory, the northeast and southeast trade winds were supposed to meet, rise, and after discharging their surplus burden of humidity in torrential rains, fall back as upper currents toward the poles, ceases to exist, and the southeast trade wind, finding its upward escape closed, like a torrent of lava breaks down the wall of opposing weaker northeast winds and, after a preliminary burst in the first week of June, settles down into quiet possession of the Indian land area. Impelled thither quite as much by a *vis a tergo* as a *vis a fronte*, and forming part of the general summer circulation of the northeastern quarto-sphere, it is impossible at present to trace how far variations in this current are due to southern oceanic or northern land conditions. Early information, however, of its strength and reliance on the principle of persistence is found to give very fairly reliable results. At the same time, an extension of the means of determining the causes and character of the particular type of circulation present in different years, by closer connection with Mauritius and west Australian stations, on the one hand, and with central Siberian, on the other, is a desideratum of the highest importance.

The last principle is regarded by several leading scientists as supplying the hitherto much desired "open sesame" to long-period prediction, not merely within the tropics, but elsewhere. As a matter of fact, it has been found that the pressure over the entire Indian area is subject to a series of oscillations (or waves), above and below the average, varying in length from six to twenty-four months, and usually some multiple of the half-year. Twelve of these occurred over India during the past twenty years, and, by comparison, it has been found that when the wave of pressure is rising during the monsoon period the rainfall is in defect, and vice versa.

By a glance, therefore, at the slope of the pressure anomaly curve, which can be plotted out month by month, it is possible to read the symptoms of the coming monsoon with far greater accuracy than the day's weather in these islands can be prevised by tapping the hall barometer.

As Mr. Eliot says, these waves are due to variations (checks or accelerations) in the seasonal mass transfer of air across the equator between southern Asia and the Indian Ocean, and a proof of this is to be found in the remarkable fact that, as a general rule, they are found equally marked, but *reversed in phase*, at Mauritius.

Moreover, these waves are not merely useful in deciding the character of the summer monsoon, but are equally closely

connected with the presence or absence of those valuable, if scanty, rains which drop from the upper southwest current more or less every year in northern India in the winter months—between November and March—when the northeast monsoon (so called) prevails near the surface.

The relation between the pressure anomaly curve and the winter rains is, curiously enough, precisely the reverse of that which obtains during the summer monsoon, a rising curve being associated with heavy and a falling curve with light rains.

It would be unnecessary to enter into the reason for this, which is fairly obvious to the student of Indian meteorology. Empirical though it is at present, the fact is exceedingly valuable in relation to the prevision of the highly important winter rains and rabi crop of northern India, upon the success or failure of which the question of famine in that area so often hinges.

Apart from these six monthly barometric waves, there is little doubt that certain influences are at work in the atmospheric circulation over the Indian area which cooperate with other periodic factors in tending to cause excess or defect of rains at intervals of from 9 to 12 years. What these influences exactly are it is difficult to say. To some extent they appear to be associated, as we have above noticed, with the eleven year period of sun spots; and certain irregularities in the parallelism of the two phenomena are, in my opinion, no argument against their covariancy and even causal connection, since the northern and southern Indian areas are at some seasons meteorologically distinct. So far as the facts go they may be summarized as follows:

1. Extensive droughts occur in the dry area of southern India, embracing in particular northern Mysore, south Deccan, southwest Hyderabad, but occasionally reaching Guzerat and parts of the Bombay and Madras presidencies, at intervals of nine to twelve years and usually, but not regularly, about a year before the sun spot minimum. When the conditions are sufficiently acute, famine occurs in the ensuing year.

2. A severe drought in the peninsula of southern India is followed by a severe drought and ensuing famine in northern India in about 5 cases out of 7.

This sequence is attributed by Mr. Eliot to the empirical law of opposition in the seasonal rainfalls of northern India and the general monsoon conditions of northern and southern India.

Thus a drought and high barometric pressure in southern India usually coincides with low pressure and heavy summer monsoon in northern India. This latter tends to be followed by a heavy winter rainfall, and this again by the compensatory law, first discovered by Professor Hill and the writer in 1877, by subsequent deficient summer rainfall in northern India.

3. Besides these, summer droughts tend to occur in northern India alone in years of maximum sun spots, connected in some way with the abnormal high pressure over western Asia which prevails at such epochs.

There is thus a double periodicity of drought and famine in North India and a single periodicity in South India in the sun spot cycle, though the relation between the phenomena is too spasmodic and irregular to be utilized as a reliable factor for prevision.

Brückner's empirical cycle of thirty-five years, whatever its cause, undoubtedly exists in the Indian area. Under the title of the "grand cycle" it has long been known in Ceylon, and it is quite possible that the present famine, which, from its area and the immense number (6,000,000) of people who are still on relief works, appears to be the greatest famine of which we have any record, may be the aggregate effect of the simultaneous occurrence of a Brückner with a sun spot cycle drought.

The problem is similar to that of the combinations of harmonic undulations which cause unusual tides, and its solution and application to prevision can only be effected by systematic study of the billows and ripples which appear in the long and short records of barometric pressure over wide areas and for many years.

NOTES BY THE EDITOR.

METEOROLOGICAL CABLEGRAMS.

For many years past the astronomical world has agreed upon a special cipher code for use in transmitting to all parts of the world cablegrams announcing such astronomical discoveries as need to be immediately made known. Thus a comet, or asteroid, discovered by some careful searcher among the myriad of stars is immediately brought to the attention of many industrious observers and is sure of being carefully watched from that time forward.

There are occasions when meteorologists and physicists need to interchange similar scientific despatches. For many years past the Weather Bureau has sent a daily cablegram to the Central Meteorological Bureau of France summarizing the conditions on this side of the Atlantic. Doubtless, many occasions may arise in which a short despatch would be very useful to others also. In order to facilitate this international exchange of telegrams, each bureau should have its own cable address and, if possible, one uniform system of cipher code should be introduced. All such addresses and codes should be registered and published in "The Atlantic Cable Directory of Registered Addresses and Code Book containing an alphabetical List of Names, Arranged by Cities and States together with a classified Business Directory, Telegraph and Cable Code, compiled by Chas. P. Bruch, Assistant Secretary of the Postal Telegraph Cable Company; a practical and useful general code, United States and Canada Section, for circulation throughout the world; subscription price, in United States, $12.50; published by Atlantic Cable Directory and Code Company, New York and London."

The official vocabulary of code words compiled by the International Code Office at Bern, Switzerland, probably offers the best basis for an international meteorological code, but the directory code compiled by Mr. Bruch and published in his volume is a selection from the preceding and especially adapted to English and American usage. The registered cable address for official communications to the Chief of the Weather Bureau is simply "Weather," and that for the Editor of the MONTHLY WEATHER REVIEW is "Cleveabbe." Nothing more in the way of address is needed, as such telegrams come direct to the Weather Bureau. Inasmuch as considerable saving of expense is effected by the use of such registered addresses, the Editor will take pleasure in publishing in the MONTHLY WEATHER REVIEW the similar cable addresses for such other meteorologists or meteorological services as may become known to him.

Since writing the above the French Association for the Advancement of Sciences has announced that the Secretary has adopted "Afas" as its telegraphic and cable address, with the added caution that this is not to be used for important written documents, or as the mail address.

A LOCAL WEATHER SIGN.

Almost every locality in the world has some special local weather sign, although these are not always recognized by the ordinary observer. We refer to signs that are rational and depend upon the physical properties of the atmosphere; and it is not derogatory to the reputation of the local weather prophet to study out and make use of these signs when he endeavors to make local weather predictions better than the general forecasts of the Weather Bureau. For a long time the audibility of sounds at a distance, or the visibility of distant objects, or the occurrence of mirage, have all been known to indicate special quiet and homogeneous conditions of the atmosphere, such as precede local disturbances. The explanation of the connection between these signs and the resulting phenomena involves the consideration that the air is peculiarly opaque to light and sound when it is a mixture of warm and cold currents, and is transparent to these when the distribution of temperature and moisture is very uniform. Thus, the English observers have for a century past recorded the visibility of objects and the audibility of sounds as indicative of approaching rain. The following interesting item may refer to some similar phenomenon, or it may possibly be that the roaring noise here described is produced by the wind blowing over the top of the mountain and forest before it has as yet reached the lowlands and distant observers. It is quite common for the wind to blow strongly night and day overhead while at the earth's surface it is calm at night but windy by day. This was explained by Espy as being due to the fact that during the daytime the sun warmed the ground and the adjacent air, which, therefore, rises by buoyancy and lets the rapid wind overhead descend to the earth's surface; whereas during the night-time the ground and the adjacent air are cold, therefore they do not rise, and the rapid upper winds flow overhead without descending to the ground. Whatever may be found to be the true explanation, it is evident that the phenomena observed at Waynesville, Haywood County, N. C., are worthy of study by the observers in that neighborhood, and the following extract from the Waynesville Courier is worthy of permanent record:

The Shewbird Mountain, 4 miles south of town, is to us the strangest thing in this whole mountain country. The mountain is full of large, rough cliffs, and by its peculiar shape and position serves as a weather signal to the people for miles around, because, as the general saying is, "when old Shewbird begins to roar you may prepare for rough weather." It generally commences about dark, and continues to roar until the rain or snow comes, which may be five hours or it may be ten. At dark the air may be perfectly still and not a cloud in sight, yet the mountain may begin to roar, and you may know that by the next morning the bad weather will be on hand. Though the mountain is 4 miles away, the roaring sounds like that made by a loaded freight train half a mile distant, and it is a continuous sound, too, with no intermission.

CLIMATOLOGY IN CALIFORNIA.

The report of the California section for June, 1900, contains a brief comparison by Mr. McAdie of the relative climates of the Weather Bureau stations in San Francisco and on Mount Tamalpais to which we must refer for many details. Mr. McAdie says:

The highest temperature recorded on the mountain was 96° on July 18, while on the same date the maximum temperature at San Francisco was 66° and at Point Reyes Light, 52°. The highest temperature recorded at San Francisco during 1899 was 94° on October 8, while on the same date the maximum temperature on Mount Tamalpais was 88° and at Point Reyes, 74°. The lowest temperature recorded during the year on the mountain was 23° on February 4, and on the same date at San Francisco and Point Reyes, 34°. During the summer months there is very frequently a cooling of 11° at the lower station according to the prevalence of fog. The mean relative humidity for the whole year is 59 per cent on the mountain and 83 per cent at San Francisco. This dryness is especially noticeable during the summer months, and is doubtless the cause of the agreeable change of climate noted by visitors. The maximum wind velocities are 91 miles on the mountain and 47 miles in the city. The total annual wind movement was 177,000 miles at Mount Tamalpais and 96,600 at San Francisco; the mean annual pressure was 29.87 and 27.55 inches; the mean annual temperature 54.9° and 55.7; mean annual dew-point, 48° and 36°; total annual rainfall, 23.23 and 36.86 inches, at the lower and upper stations, respectively.

METEOROLOGICAL CONDITIONS FAVORABLE TO SPONTANEOUS COMBUSTION.

Every meteorological or climatological condition that can affect the welfare of mankind comes under the consideration of the Weather Bureau, no matter whether explicitly mentioned in the acts of Congress or merely implied in general.

In the June report of the Ohio section, Mr. J. Warren Smith calls attention to the fires that are started by the spontaneous combustion of hay. Spontaneous combustion, whether of hay, cotton, oil and waste, or any other substance, becomes imminent only under certain atmospheric conditions as to temperature, pressure, and moisture. The heat caused by the oxidation of the oil in cotton waste or rags, or that caused by fermentation in moist hay and other substances, does not give rise to flame unless the temperature of the whole mass is above a certain limit, which is as yet ill defined. In general, spontaneous combustion is not to be feared if the fresh supply of oxygen from the atmosphere is cut off. If the inflammable substance is confined within a non-conducting inclosure, such as the interior of a bale of cotton or a tight room or a closed box, its temperature may attain a point surpassing the point of ignition, but danger does not occur until the inclosure is opened and a fresh supply of oxygen is suddenly admitted when, of course, everything breaks out in flame. The best preventative of spontaneous combustion is a rapid and complete ventilation, by which means the oxydizing and fermenting substances are kept cooled down below the point of ignition. Mr. J. Warren Smith states—

That the fermentation within moist hay may raise the temperature to 374° F., and that careful tests show that clover hay actually does ignite at temperatures approximately the same as this. He particularly requests that all details as to actual cases of spontaneous combustion may be sent to him for further investigation.

WEATHER BUREAU SERVICE IN HAITI.

In connection with the improvement of the West Indian branch of the Weather Bureau service, we take pleasure in recording the very material assistance received through the active cooperation of Hon. W. F. Powell, United States Envoy Extraordinary and Minister Plenipotentiary at Port au Prince, through whom our Government has received from the Haitian Government the free use of its telegraph service in aid of this important work. At first the request of the Weather Bureau for permission to establish a meteorological and telegraph station at Mole St. Nicholas was declined, but after some delay the government gave consent to the establishment of an observatory at Cape Haiti. Unfortunately the immediate establishment of this important station was temporarily delayed for the want of the necessary funds. Meantime negotiations with the cable company and the Haitian Government land service led to an arrangement by which the cable expenses are paid by the Weather Bureau but the receipt and distribution of all observations and forecasts throughout Haiti was assumed by the Haitian Government, whose cabinet stated through its minister, Mr. St. Victor, "that the government grants to the United States the use of its telegraphic service free of all cost to the Weather Bureau," and added, "that it is glad to render this aid to our Government in the establishment of such an important work." It is under-

stood that advisory messages and hurricane warnings will be disseminated and hurricane signals displayed in Hayti the same as in the other West Indian Islands, beginning July 1, 1900. This information as to hurricanes will be available at the offices of the United States consuls, vice consuls, or consular agents, whenever such officials are available.

THE LAWS OF ATMOSPHERIC CIRCULATION.

A year ago, Prof. V. Bjerknes read before the German Association of Scientists, at Munich, a memoir on dynamics as applied to the circulation of the atmosphere, in which certain principles are developed that undoubtedly apply to many atmospheric movements although probably not to all of them. This memoir is the third that Professor Bjerknes has published on this subject, and one of his pupils, Mr. Sandstrom, has further developed the subject and applied this new method to a discussion of the American storm of September 21-24, 1898. The Editor is preparing to publish a complete translation of both these papers in order to make them available to American students. Meantime the following notice of the work of Professor Bjerknes is copied from Nature June 28, 1900, vol. 62, p. 200, and will give the reader a general idea of the considerations introduced into this latest effort to investigate the motions of the atmosphere in the light of rigorous mechanical laws:

The dynamical principle of atmospheric circulation is treated by Prof. V. Bjerknes in the Meteorologische Zeitschrift, March and April, 1900. Starting with the property that the circulation theorems of abstract hydrodynamics (according to which the circulation in any circuit formed by the same particles is constant) only hold good when the pressure is a function of the density alone, Professor Bjerknes points out that in the atmosphere this condition is not satisfied, owing to local differences both in the temperature and in the degree of moisture present in the air. Of these two causes the first seems to be the most important. The conception of "solenoids" is then introduced, a solenoid being an elementary unit tube bounded by pairs of consecutive surfaces of equal volume and equal pressure, respectively. The fundamental proposition in connection with circulation asserts that the rate of change of the circulation in any circuit is proportional to the number of solenoids inclosed by that circuit. A number of diagrams are given representing the cases of land and sea breezes, trade winds, local upward currents, hill and valley winds, cyclones, and anticyclones. The omission to take account of the extra complications arising from viscosity and terrestrial rotation probably prevents these investigations from being utilized for calculations in connection with weather prediction; and for this reason Professor Bjerknes' theory must be rather regarded in the same light as other dynamical theories of physical phenomena, in which certain simplifications not occurring in nature are made in order to bring the calculations within the range of mathematical analysis. But it is only by the aid of such simplifications that order can be evolved out of the chaos of statistics furnished by the experimentalist.

Prof. V. Bjerknes, of Stockholm, is the son of Prof. C. A. Bjerknes, of Upsala, and has lately published the first volume of the collected memoirs of his father. [1] These memoirs bear especially on very important theorems in the motion of fluids and have been by him applied especially to the movements of spheres in liquids whence resulted an apparent explanation of the force of gravity, the attractions of molecules, and many correlated phenomena. In order that our readers may have some knowledge of the general character of the work of Prof. C. A. Bjerknes, we append the following review of this first volume of lectures, as published by Prof. Carl Barus, at page 395 of the Journal of Physical Chemistry for May, 1900:

Among the attempts to explain the nature of force in terms of the medium through which it acts, those based on the hydrodynamics of an incompressible frictionless fluid seem most at hand, inasmuch as the inevitable ether is given as such a fluid at the outset. The irrotationally moving fluid surrounding a vortex has been used as a field of this kind by Kelvin; and J. J. Thomson has shown at length that whereas stable groups of aggregated vortices are possible up to eight in number, beyond this all grouping becomes unstable, thus suggesting close relations to atomicity. The technical difficulties in the way of the vortex hypothesis have barred its progress. On the other hand, the vibratory and pulsating theory, which had an independent origin throughout and need not be incompatible with the former, has now many achievements in its favor. That force can be derived from the impact of a wave train in evidence by the radiometer, but the mechanism of this apparatus is too complex to be suitable. Kelvin showed that waves lash the boundary of the medium with a pressure per square centimeter equal to the product of half the density of the medium and the square of the wave velocity. Mayer's famous experiment, with pivoted resonators rotating in the acoustic field of their own notes, was shortly after its discovery explained by Raleigh, proving that the internal pressure in a resonator exceeds atmospheric pressure, so that a force exists at the mouth directed normally inward.

Long before all this, before Faraday had proclaimed his doctrine of lines of force, and before Maxwell had developed that doctrine, indeed, almost before Kelvin had published his method for the solution of hydrodynamic problems by Hamilton's principle, the elder Bjerknes had, independently, become dissatisfied with "action at a distance," and had tentatively suggested a remedy. As far back as 1868, (Maxwell's great treatise was completed in 1873) with the simplest of media (frictionless, incompressible fluid) and the geometrically simplest solid, (a sphere) Bjerknes had found that the force actuating the center of one of two spheres, and arising in a second moving sphere, has the same intensity and direction as if the former were absent, and is equal to the acceleration in question, multiplied by three-halves of the medium displaced by the first sphere, certainly a suggestive proposition, though it did not then predict Newton's third law. Meanwhile Kirchhoff had adopted Kelvin's hydrodynamic method, and had developed it for problems of precisely the present kind, with his usual ability. Bjerknes was then able to apply the Kelvin-Kirchhoff investigation to his own researches with such success as not only to deduce the law of action and reaction as a necessary property of his own mechanism, but to show that pulsating spheres act on each other through the medium by stressing it into a field of force, *mutatis mutandis*, identical in character with the action on each other of magnetic or electrical molecules.

These papers have been much sought after by physicists, in spite of their inaccessibility, and the fact that demonstrations were often withheld. It is therefore fortunate that the younger Bjerknes, an equally able investigator, has collected the work of his father in a systematic treatise, of which the first volume is now before us. As above indicated, the book treats at length of the motion (vibration, translation) of a system of spheres of variable (pulsating) volume submerged in the ideal fluid stated, preliminarily to deriving action at a distance from purely hydrodynamic phenomena. This book is, therefore, not without interest to the chemist, for the behavior of molecules imbedded in ether is precisely such as falls within the scope of Bjerknes' investigation.

It would be going too far to examine the work in detail, and such an examination, without mathematics, would be most unsatisfactory. Investigations like the present are usually made by deriving the particular equations of motion, and then so transforming them that they may be identical in character with those of the known phenomenon which it is aimed to explain. The remainder of the work is an interpretation of corresponding terms, parameters, and constants. Suffice it to add, therefore, that in 1878 Bjerknes investigated the condition of rotational stability of the axis of permanent oscillation of spheres in an oscillating medium, and found both a pulsating pair or a single oscillating sphere to be subject to torque, the final link in his argument.

A reexamination thus reveals that Newton's first, second, and third laws have all been deduced, inclusive, of course, of inertia. Hydrodynamic forces may be superposed, which is a predication of vector summation. They are independent of the velocity of the body actuated. The system admits of concealed motions (potential energy); it is subject to the law of the conservation of energy, and its potential is subject to Laplace's equation. In a general way hydrodynamic forces vary as the product of the volumes (ultimately masses) of mutually reacting spheres. Specifically, two identically pulsating spheres attract each other, two oppositely pulsating spheres repel each other, with a force varying as the density of the medium and the intensity of pulsation, and inversely as the square of their distance apart. Furthermore, action of magnetic character (attraction, repulsion, rotation) occurs between oscillating and pulsating systems. Finally, heavy spheres of opposed pulsations attract each other at long ranges and repel each other at short ranges, with a position of stable equilibrium for an intermediate range. The converse holds for spheres lighter than the medium.

It is hardly necessary to give further examples of the contents of this remarkable book. The author has been gracious in collecting the chief dynamic and hydrodynamic principles in the introduction, for the convenience of the reader, but a good working knowledge of applied mathematics is necessarily presupposed.

[1] Vorlesungen über hydrodynamische Fernkräfte, nach C. A. Bjerknes' Theorie. By V. Bjerknes. Band I. 17 by 26 cm., pp. xvi, 33 S. Leipzig: Johann Ambrosius Barth, 1900. Price: paper, 10 marks.

PREVENTION OF HAIL BY CANNONADING.

Several articles have appeared during the past year in American newspapers and journals urging that some trial be made in this country of the new system of cannonading devised by Mr. Stiger in order to prevent destruction by hail. Mr. Stiger is a burgomaster of Windisch-Feistritz, Styria, who conceived the idea that by shooting a vortex ring upward into the cloud he could so disturb the process of the formation of hail as to protect his own vineyards. Within the past five years thousands of the special form of cannon used by him for this purpose, and particularly those devised by G. Suschnig of the manufacturing firm of Karl Greinitz and Nephews at Gratz, have been established in northern Italy and southern Austria. Although it is claimed that by firing these cannon frequently, and when placed quite close together, storms have been diverted, yet the details thus far published are too meagre to afford a basis for any rational opinion as to whether or no the Stiger system is useful. Inasmuch as there is no reason to believe on *a priori* grounds in its efficacy, we must rely wholly upon a careful discussion of the recorded observations in order to ascertain the efficiency of the cannonading. Such a discussion has not yet come to hand and will, in fact, be very difficult to make, owing to the absence of the long-continued records that are needed in order to establish normal values. Meanwhile, in order to respond to the popular interest in the subject, the Editor has appealed to Mr. Suschnig for information as to the expense and other details attending a fair trial of Stiger's method, and the reply is given below. The printed pamphlets describing the special shooting apparatus manufactured at the forges at St. Katharein on the Lamming, near Bruck on the Muir in Styria, enumerate the following types:

					Crowns.
No. A-200,	cannon standing	2.8	meters high,	price complete,	110
" B-250,	" "	2.9	"	"	130
" C-300,	" "	3.3	"	"	160
" D-350,	" "	3.9	"	"	200
" E-400,	" "	4.5	"	"	240

These prices include all the apparatus required in the experiment. It must not, however, be supposed that a single cannon or shooting station is sufficient to produce any decided effect. On this point Mr. Suschnig writes, as follows:

In regard to your question as to where the apparatus can be obtained in America, I must reply that we have not as yet sent any of the apparatus to America because none have ever been asked for from that country. We have only delivered apparatus on our own continent because on the other continents interest has not yet been awakened in this important matter. The only exception is the Asiatic Indian government which has announced to us the visit of its delegates for inspection on their way to the Paris Exposition. We believe that the installation of an observing region of 40 square kilometers, with 40 apparatus in 4 lines would be necessary in order that your Government should obtain reliable studies as material for investigation. We would recommend placing in the first of these lines the apparatus of type E-400; in the second line, type D-350; in the third line, type C-300; and in the fourth line, type B-250; we believe that type A-200 can only be used to advantage at places of high altitude (700-1000 meters above sea level).

The apparatus can be sent to America by us either via Genoa and Gibraltar or via Hamburg.

We consider that the various types of cannon should be adapted to he altitude of the station above sea level. The larger cannon for the ıower stations about as shown in the following:

For altitude 0-200 meters	Type E
For altitude 201-350 meters	Type D
For altitude 351-500 meters	Type C
For altitude 501-650 meters	Type B
For altitude 650 and upwards	Type A

It would seem that if there be any small region in this country peculiarly liable to destructive hail the Stiger method could be satisfactorily tried by covering this region with forty firing stations arranged in four lines each 10 kilometers long and 1 kilometer apart, so as to cover 40 square kilometers. A kilometer is about 0.62 mile, so that 10 kilometers would represent a little over 6 miles. The cost of the apparatus would be about 7,300 crowns in Austria. Probably if we include all other expenses it would cost about $10,000 to start the experiment at any convenient place in the United States. The annual cost of maintenance would depend upon whether each farmer attends to the apparatus himself or whether several persons are employed to see that the experiment is carried on properly and fairly. We do not recommend any such experiment since we know of no region of this small size in this country that is troubled frequently by destructive hail and it might easily happen that one would have to wait fifty years before having a good chance to try the efficiency of Stiger's vortices. The frequency with which destructive hail occurs at any spot in this country is about the same as the frequency of local tornadoes and with hail, as with the tornado, it is more reasonable and cheaper to insure one's self against the financial loss that may be incurred rather than to protect one's self against the material loss that may occur. In either case, we have to spend money and the loss of money and destroyed material is eventually distributed through the community, just as in the case of fire. Experience has shown that, although up to a certain point, it is wise to protect against fire, yet beyond that point one may waste his money in attempted protection and will do better to spend it in insurance against the inevitable accidents of life.

While the above remarks apply more directly to the economy of Stiger's method of preventing hail, they are not to be considered as implying any doubts as to the scientific correctness of his method. On that point we know too little, either for or against, to justify any very decided opinion in this matter.

Inasmuch as we know that hailstorms are usually accompanied by rapidly ascending currents within large cumulus clouds, it may plausibly be supposed that if the vortices from Stiger's cannon could materially interfere with these currents, they might also interfere with the formation of hail. Stiger himself at first supposed that the calm period that preceded the severe local storm was the feature favorable to the formation of hail, and that his cannonading so greatly disturbed this calm as to prevent the hail from forming, but subsequently he thought that his vortices affected the cloud itself.

Our own conviction is that the energy of the movements within the vortex is too slight in comparison with the energy within a hail cloud to justify us in expecting any appreciable mechanical disturbance. On the other hand, the descriptions of the European experiments show that the Stiger vortex is essentially a white cloud of fine particles resulting from the explosion of the gunpowder. Now, a cumulus cloud is, as is well known, composed of aqueous particles condensed primarily upon dust nuclei. We have already (see MONTHLY WEATHER REVIEW, April, 1900, pp. 156-159) explained how the condensation of moisture within a rising cloud is hindered until a state of extreme supersaturation is attained because the condensing moisture has no nuclei on which to collect except the small drops of water already formed. Now, the Stiger vortex brings to the cloud a fresh accession of innumerable dust nuclei and, moreover, nuclei that are especially favorable to the condensation of moisture. This must, therefore, to a moderate degree, facilitate the formation of new drops of water and the prevention of that stage of supersaturation as the result of which large drops of water, or large hailstones, or large snowflakes, and balls of snow are formed.

Although this forcible addition of dust nuclei to a thunder cloud may thus possibly have some effect on the cloud and its hail, yet we are bound to confess that even this hypothesis seems to be inapplicable in view of the fact that in the course of the Dyrenforth experiments, made by himself

and others, both in Texas and in New York, both gunpowder and nitroglycerine were sent both by bombshells and small balloons up into the cloud region and exploded there without any appreciable effect, notwithstanding the immense number of particles of dust and powder thus violently thrown into the cloud. The experiments of Carl Barus, for the Weather Bureau, in 1893-94 (see Weather Bureau Bulletin No. 12), showed that the vapors of phosphorus and sulphur were peculiarly effective in producing cloudy condensation. We have, therefore, no good reason for believing that the Stiger vortices can influence even the molecular processes within the cloud.

THE WEATHER BUREAU IN DOMINICA, W. I.

The Chief of the Weather Bureau has received, under date of July 12, a letter from Dr. H. A. Alford Nicholls, C. M. G., M. D., Vice-President of the Dominica Agricultural Society, informing him that—

> The officer in charge of the Dominica branch of your department has been elected an honorary member of the Dominica Agricultural Society.

The pleasure that it gives the Chief to receive this appreciative recognition of the good work that the Weather Bureau is doing in the interests of the general public in the West Indies, is heightened by the receipt of the following letter from Charles E. Ashcraft, Jr., observer Weather Bureau and official in charge of the station at Roseau, Dominica. Mr. Ashcraft says:

> I have the honor to inform you that I am in receipt of a letter dated the 3d instant, from the Acting Secretary of the Dominica Agricultural Society, stating that the council of the society has elected me, as the official in charge of this station of the United States Weather Bureau, an honorary member of the Society, and requesting me to inform you of the same.
>
> This action is taken, presumably, as a token of the appreciation of the planters and other residents of Dominica, for the establishment and maintenance of one of our stations in the island. I have already extended, on behalf of the service, thanks for the compliment and assurance that it is an honor duly appreciated.

It is oftentimes difficult to distinguish between the honor due to an individual, on account of his own personal labors, and the honor due to him as representative of a government or institution. In the present case we doubt not that Mr. Ashcraft has taken the proper view of his appointment, and his admirable letter shows that he was eminently worthy of it.

THE NILE FLOODS AND THE INDIAN MONSOONS.

The official journal of the Manchester Cotton Association is entitled "Cotton," and is edited by Richard J. Allen; we copy the following from the number for Saturday, July 14, 1900:

> Whether there is any relation between the Nile floods and the monsoon rains in India has been investigated by Mr. John Eliot, the meteorological reporter to the government of India. His investigations suggest that the relation is found more exact and complete than had been supposed. He gathers from the statistics and conditions for the last twenty-five years that during six of these years when the rainfall in India was about normal the Nile was also in very high flood. Mr. Eliot says that the facts are sufficient to indicate that these two agricultural countries, which are almost solely dependent for their prosperity on the distribution and amount of rainfall, are similarly affected by general meteorological conditions and variations of conditions from one year to another. It is suggested that the coincidence is due to the fact that the rainfall of the period June to September or October in Abysinia, the south Arabian highlands, and northern India is derived from a common source. The whole of the regions mentioned become intensely heated in May, when practically no rain falls there. The solar action during that month, he argues, gives rise to meteorological changes which prepare for the advance of the monsoon currents, but do not primarily and directly induce the currents. If the currents are deflected by local conditions, or if the southeast trade winds are weaker than usual, droughts in India and small rainfall in the Abyssinian highlands result. Last year the currents in question were deflected to south Africa. After June the monsoon current practically collapsed in the Arabian Sea, and during July, August, and September the atmospheric movements were little different from those of May, and little aqueous vapor was brought up by them from the Indian Ocean. What are the influences which cause the deflection of the currents? Mr. Eliot has previously suggested that the problem may be solved by a closer study of the meteorology of Australia, the Indian Ocean, and possibly the Antarctic Ocean. It is suggested that the new cable from the Cape to Australia and a station well south of Mauritius may be useful in enabling observers in India to get more information from the Southern Hemisphere in good time.

We have not yet seen the original paper by Mr. Eliot, to which the above seems to refer, but recall the very important paper by Eliot, published some years since, in which he shows that the southwest monsoon of India can be traced backward across the equator north of Madagascar where it merges into the southeast trade wind of the south Indian Ocean, and that this southeast trade wind is turned northward as it crosses the torrid zone, partly by reason of the great indraught toward the center of Asia and partly also by the resistance of the southeast coast of Africa against which it impinges. That, in fact, the rain that falls among the mountains of the upper Nile region has been abstracted from this southeast trade wind, which then turns toward India where it again gives up its moisture as a southwest monsoon. It would, therefore, be natural to expect an intimate relation between the rains of these two regions. If the southeast trade is feeble or does not extend far enough westward, the Nile, especially the White Nile, will receive less water and, for the same reason, the southwest monsoon will be feeble and India will receive less rain.

In the absence of the article, from which the editor of Cotton has quoted, we have taken the liberty of reprinting, on page 246, an excellent article by Mr. E. Douglas Archibald which has just appeared in Symons' Monthly Meteorological Magazine, giving a summary of the present condition of our knowledge of this subject.

ANOTHER USE FOR THE KITE.

A few years since we had occasion to enumerate the various uses to which ingenious men have applied the kite. Among these was its application to the saving of life by carrying a line from a shipwrecked vessel over the breakers to the wreckers on the shore beyond. We now learn that two young men in Chicago have given an exhibition showing how those within a besieged town or other inaccessible place can use the kite line to carry a telephone, with its separate telephone wire, through the air, and let it drop from the kite upon a distant place while the kite still remains in the air. By using a very large box kite and attaching to the kite line a little way below the kite a pulley through which runs the telephone wire, the telephone may be dropped from the pulley while the insulated wire keeps up the connection with the man at the kite reel. Of course, at the present time, when kites have rarely been sent out with more than two miles of wire, which corresponds to a horizontal distance of much less than two miles, this method does not promise to put us into communication with persons at a great distance, but it may, of course, be very useful for short distances.

A NEW METEOROLOGICAL JOURNAL.

In accordance with the announcement of a year ago, the new meteorological journal, edited by A. J. Monnet and Chr. A. C. Nell, under the title of Nederlandsch Tijdschrift voor Meteorologie, began with the number for July 15, 1900, and

will appear on the 15th of each month hereafter. Subscriptions may be sent to the publisher, T. Noordhoff, at Groningen. Although but few Americans, even in New York, have kept up their knowledge of the Dutch language, yet those who are familiar with English and German will easily read the simple technical language of this journal, and we doubt not that it will find a wide circulation in Holland and her colonies, all of which have done so much for meteorology. The present number contains several leading articles, such as those by Groneman on the caps that form over the cumuli; the editorial review of meteorology in Mexico and of the climate of that country; the summary of Claxton's attempt to standardize the readings of the solar radiation thermometers; Monnet's article on the singing of telegraph and telephone wires as a prognostic of coming weather. These and a number of smaller articles fill up the sixteen pages, with the best of technical matter, presented in as popular a style as is practicable, in a way to thoroughly interest and instruct the reader.

WEATHER CABLEGRAMS FROM THE AZORES.

For a number of years past the Weather Bureau has sent a daily cablegram, in cipher, to the Meteorological Office in Paris, giving the forecasters at that place a concise synopsis of the barometric condition and the storms on this side of the Atlantic. Señor Francisco Chaves, Director of the Meteorological Observatory at Ponta Delgado, on the Island of St. Michael in the Azores, is about to be put in direct connection with both Europe and America and has arranged that the daily cablegram for Paris shall be sent to him also by the Weather Bureau. This cablegram will include information from the Hydrographic Office about the derelicts, ice, and other matters that may interest him. In return for these he will send the Chief of the Weather Bureau such meteorological data as may be of interest to our forecasters and such other information, in regard to storms and vessels as may be desired, either by the Weather Bureau or the Hydrographic Office. These cablegrams will be sent by the Bureau to the Hydrographic office, so that both these institutions will profit by these international exchanges.

PINEAPPLE GROWING IN SOUTHERN FLORIDA.

In the June report of the Florida section Mr. A. J. Mitchell, Section Director, introduces two photogravures illustrating the growth of pineapples in that State. The bulk of the pineapple crop comes from the lower southeast coast; it is strictly a Florida industry. The severe winters of the past few years have made the business seem rather hazardous, but great success has attended the efforts to protect the pineries from frost. The Weather Bureau warnings are indispensable to the success of this important crop.

THE WEATHER OF THE MONTH.

By ALFRED J. HENRY, Professor of Meteorology.

The chief characteristics of June weather were (1) an unusual persistence of areas of high pressure in the Lake region, giving northerly winds and cool weather; (2) heavy rains and excessively cloudy weather in the east Gulf States and Tennessee, the western part of Virginia, and the District of Columbia; (3) high temperatures west of the one hundredth meridian; and (4) absence of severe local storms and tornadoes.

PRESSURE.

The distribution of monthly mean pressure is graphically shown on Chart IV, and the numerical values are given in Tables I and X.

Mean pressure was highest (30.04 inches) on the north Pacific coast and lowest (29.70) in the middle Plateau region. It was decidedly below the normal (from .05 to .10 inch) in the upper Missouri Valley, the northern Rocky Mountain region, and thence westward to the Pacific coast. Pressure was also below normal from the central Mississippi Valley northeastward to Newfoundland and the mouth of the St. Lawrence. The regions over which pressure was in excess of the normal were the immediate coast of the Carolinas, a portion of the eastern Rocky Mountain slope, the upper Lake region, and a portion of the California coast.

TEMPERATURE OF THE AIR.

The distribution of monthly mean surface temperature, as deduced from the records of about 1,000 stations, is shown on Chart VI.

Temperature was above the seasonal normal from about the ninety-fifth meridian westward to the Pacific. Over this large area temperature was from 1° to 7° above the normal throughout the month. Temperature was also above the seasonal average in New England, New York, eastern Pennsylvania, and New Jersey. In the upper Lake region and thence southeastward to the Gulf and south Atlantic coasts temperature was below the seasonal average by amounts ranging from a fraction of a degree to nearly 3° in extreme cases.

Average temperatures and departures from the normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since January 1.	Average departures since January 1.
		°	°	°	°
New England	10	63 6	+ 0.8	+ 2.3	+ 0.4
Middle Atlantic	12	71.4	+ 0.6	+ 1.0	+ 0.2
South Atlantic	10	76.7	− 0.5	− 4.9	− 0.8
Florida Peninsula	7	77.9	+ 0.1	− 6.5	− 1.1
East Gulf	7	77.8	− 1.1	− 8.2	− 1.4
West Gulf	7	80.3	+ 1.2	+ 1.3	+ 0.2
Ohio Valley and Tennessee	12	73.5	− 0.5	− 3.4	− 0.6
Lower Lake	8	66.6	− 0.5	− 2.5	− 0.4
Upper Lake	9	61.6	− 0.7	+ 6.0	+ 1.0
North Dakota	8	67.2	+ 2.7	+29.0	+ 4.8
Upper Mississippi Valley	11	71.1	− 0.1	+ 5.5	+ 0.9
Missouri Valley	10	72.1	+ 1.5	+16.6	+ 2.8
Northern Slope	7	68.7	+ 5.9	+30.0	+ 5.0
Middle Slope	6	74.2	+ 2.6	+12.8	+ 2.1
Southern Slope	6	76.8	+ 0.9	+ 2.6	+ 0.4
Southern Plateau	15	75.4	+ 0.7	+11.7	+ 2.0
Middle Plateau	9	69.2	+ 5.3	+24.6	+ 4.1
Northern Plateau	10	66.2	+ 5.2	+23.2	+ 3.9
North Pacific	9	59.6	+ 1.4	+13.9	+ 2.3
Middle Pacific	5	62.7	+ 0.9	+ 8.2	+ 1.4
South Pacific	4	68 2	+ 1.7	+11.2	+ 1.9

Maximum temperatures ranging from 100° to 109° were quite generally recorded from the Rio Grande Valley northward over the eastern slope of the Rocky Mountains to the British Possessions. A maximum temperature of 100° was

not recorded at any Weather Bureau station in the Mississippi Valley or to the eastward thereof during the month.

In Canada.—Prof. R. F. Stupart says:

The mean temperature was equal to or above average over the whole Dominion, excepting in the upper Ottawa Valley, the districts of Algoma and Nipissing, and in some few localities in eastern Ontario. The greatest positive departures, about 4°, occurred in Manitoba and Assiniboia, and the largest negative departures reported were 2°, at both White River and Bisset, in Ontario. Extremes were pronounced, and especially so in Manitoba and the Territories, where from 6th to 8th and on the 13th a cold wave prevailed, and frost was recorded in many parts. This was followed, about the middle of the month, by intense heat, and June 21 to 23 the temperature rose above 100° in most localities.

PRECIPITATION.

The month was a dry one except in some districts, where the downpour was remarkable. The regions having a heavy fall were: Mississippi, Alabama, Georgia, Florida, the Carolinas, the District of Columbia, portions of Virginia, and the north Pacific coast. In the last-named region as much as 10 inches of rain fell in localities where the normal June rainfall is less than half as much. Taking the region as a whole the fall was 188 per cent of the normal. In the east Gulf States the fall was even more extraordinary, the average for the district being 13.02 inches, or 254 per cent of the normal. In some of the regions of heavy rainfall, as in the District of Columbia, the fall was local, places 30 to 40 miles distant receiving only a half or a third as much, but in both the east and west Gulf States and Tennessee the fall was uniformly heavy. Less than the usual amount of rain for June fell in the Lake region, the upper Ohio, the middle and upper Mississippi and the Missouri valleys, the eastern slope of the Rocky Mountains, and locally throughout New York, the Middle Atlantic States, and New England.

Average precipitation and departures from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
		Inches.		*Inches.*	*Inches.*
New England	10	2.19	65	−1.2	+ 0.9
Middle Atlantic	12	3.96	108	+0.3	− 2.3
South Atlantic	10	6.30	126	+1.3	+ 1.6
Florida Peninsula	7	9.26	146	+2.9	+ 9.7
East Gulf	7	13.02	254	+7.9	+11.1
West Gulf	7	3.98	103	+0.1	+ 0.6
Ohio Valley and Tennessee	12	4.97	119	+0.8	− 5.1
Lower Lake	8	2.68	75	−0.9	− 1.7
Upper Lake	9	2.06	55	−1.7	− 4.5
North Dakota	8	1.53	39	−2.4	− 5.7
Upper Mississippi Valley	11	2.84	61	−1.8	− 3.8
Missouri Valley	10	3.47	81	−0.8	− 3.3
Northern Slope	7	0.77	32	−1.6	− 1.4
Middle Slope	6	1.93	62	−1.2	− 0.1
Southern Slope	6	2.10	60	−1.4	+ 1.0
Southern Plateau	15	0.29	59	−0.2	− 1.2
Middle Plateau	9	0.29	49	−0.3	− 1.1
Northern Plateau	10	0.86	59	−0.6	− 1.2
North Pacific	9	4.27	188	+2.0	− 0.3
Middle Pacific	5	0.67	118	+0.1	− 4.2
South Pacific	4	0.02	17	−0.1	− 4.2

In Canada.—Professor Stupart says:

The rainfall was in excess of the normal in British Columbia and Alberta; also in some few localities in the more eastern and central counties of Ontario, in the eastern townships and in New Brunswick, near the Bay of Fundy. In Manitoba and the larger portion of the territories, however, there was a pronounced drought, and a deficiency was also marked in Ontario near the shores of the Great Lakes. In Alberta the rainfall seems to have been ample. On June 8 there was an all-day snowstorm over the greater portion of Alberta; four inches lay on the ground in some localities. In Manitoba there was scarcely any rain until quite the end of the month, after great damage had been done by drought and intense heat. The only really good rain in southern Ontario occurred on the 1st, when over an inch fell.

HAIL

The following are the dates on which hail fell in the respective States:

Alabama, 5. Arizona, 28. Arkansas, 11. California, 10, 11, 13, 15. Colorado, 1, 2, 3, 4, 6, 9, 10, 11, 12, 13, 14, 16, 17, 18, 20, 22, 23, 24, 25, 26, 27, 28, 29, 30. District of Columbia, 8. Florida, 18. Georgia, 16. Idaho, 3, 4, 8, 14, 15, 23, 24, 30. Illinois, 11, 28, 29. Indiana, 29. Indian Territory, 8. Iowa, 6, 9, 12, 16, 21, 30. Kansas, 1, 2, 4, 6, 7, 8, 9, 11, 12, 15, 16, 17, 20, 21, 27, 28, 29. Kentucky, 7, 8, 30. Louisiana, 8, 14. Maryland, 8. Michigan, 5, 7, 26, 27, 29. Mississippi, 4. Missouri, 6, 7, 8, 10, 12, 13, 16, 17, 21, 23, 29. Montana, 2, 8, 16, 18, 22, 23, 24, 25, 27. Nebraska, 1, 2, 3, 6, 9, 11, 12, 14, 15, 16, 17, 20, 27, 28, 29. Nevada, 10, 13. New Jersey, 27, 29. New Mexico, 2, 7, 8, 10, 11, 12, 16, 19, 20, 21, 23, 25, 26, 29. New York, 2, 3, 8, 19, 26, 27, 28. North Carolina, 8, 30. North Dakota, 2, 12, 26, 27. Ohio, 7, 8, 21, 27, 28. Oklahoma, 1, 8, 9, 11, 13, 18. Oregon, 13, 15, 23, 29. Pennsylvania, 2, 8, 11, 18, 19, 28. South Dakota, 12, 27. Tennessee, 30. Texas, 4, 10, 19. Utah, 9, 10. Virginia, 8, 11, 21, 26, 30. Washington, 24, 29, 30. Wyoming, 3, 9, 10, 14, 24.

WIND.

The maximum wind velocity at each Weather Bureau station for a period of five minutes is given in Table I, which also gives the altitude of Weather Bureau anemometers above ground.

Following are the velocities of 50 miles and over per hour registered during the month:

Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Boise, Idaho	13	55	nw.	Mount Tamalpais, Cal.	20	67	nw.
Cleveland, Ohio	7	54	w.	New York, N. Y	27	50	nw.
Denver, Colo	14	51	nw.	Do.	28	54	nw.
El Paso, Tex	23	50	ne.	Oklahoma, Okla	18	50	nw.
Do.	24	52	nw.	Pierre, S. Dak	27	52	nw.
Do.	30	50	nw.	Point Reyes Light, Cal.	30	72	nw.
Lincoln, Nebr	1	50	nw.	Sioux City, Iowa	16	50	se.
Mount Tamalpais, Cal.	17	53	w.	Springfield, Mo	17	63	nw.
Do.	18	60	nw.	Williston, N. Dak	7	50	nw.
Do.	19	59	n.				

SUNSHINE AND CLOUDINESS.

The distribution of sunshine is graphically shown on Chart VII, and the numerical values of average daylight cloudiness, both for individual stations and by geographical districts, appear in Table I.

Average cloudiness and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	4.7	−0.4	Missouri Valley	4.4	−0.4
Middle Atlantic	5.5	+0.5	Northern Slope	3.8	−1.0
South Atlantic	5.8	+0.9	Middle Slope	3.8	+0.1
Florida Peninsula	5.5	0.0	Southern Slope	2.8	−1.6
East Gulf	6.6	+1.8	Southern Plateau	2.3	+0.4
West Gulf	4.4	−0.2	Middle Plateau	3.3	+0.3
Ohio Valley and Tennessee	6.0	+1.0	Northern Plateau	4.1	−1.0
Lower Lake	4.7	−0.2	North Pacific Coast	6.0	−0.1
Upper Lake	4.5	−0.7	Middle Pacific Coast	4.4	+1.2
North Dakota	3.7	−1.5	South Pacific Coast	3.6	+0.3
Upper Mississippi	4.7	−0.3			

HUMIDITY.

Average relative humidity and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
	%			%	
New England	75	− 5	Missouri Valley	63	− 6
Middle Atlantic	72	− 1	Northern Slope	53	− 3
South Atlantic	81	+ 3	Middle Slope	61	+ 2
Florida Peninsula	80	− 1	Southern Slope	58	− 2
East Gulf	83	+ 8	Southern Plateau	27	− 1
West Gulf	79	+ 5	Middle Plateau	28	− 9
Ohio Valley and Tennessee	76	+ 6	Northern Plateau	48	− 4
Lower Lake	69	− 3	North Pacific Coast	76	− 3
Upper Lake	70	− 3	Middle Pacific Coast	67	+ 2
North Dakota	57	−11	South Pacific Coast	66	+ 2
Upper Mississippi	68	− 3			

ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table VII, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

Thunderstorms.—Reports of 5,736 thunderstorms were received during the current month as against 5,253 in 1899 and 3,855 during the preceding month.

The dates on which the number of reports of thunderstorms for the whole country were most numerous were: 27th, 385; 28th, 374; 8th, 268.

Reports were most numerous from: Missouri, 522; Illinois, 283; Colorado, 275; Pennsylvania, 246.

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz, 8th to 16th.

In Canada.—Auroras were reported as follows: Father Point, 2d; Minnedosa, 4th, 23d.

Thunderstorms were reported as follows: Halifax, 30th; Grand Manan, 27th, 28th, 29th, 30th; Yarmouth, 2d, 3d, 28th, 30th; Charlottetown, 21st, 30th; Father Point, 2d; Quebec, 21st, 26th; Ottawa, 8th 27th; Kingston, 3d, 22d, 26th, 28th, 29th; Toronto, 13th, 26th; White River, 21st, 26th, 29th; Port Stanley, 7th, 8th, 13th, 17th, 27th, 28th; Saugeen, 7th, 10th; Parry Sound, 26th, 29th; Port Arthur, 6th, 7th, 10th, 21st, 24th; Winnipeg, 5th; Minnedosa, 3d, 6th, 18th; Qu'Appelle, 2d, 17th; Medicine Hat, 15th, 16th; Swift Current, 14th, 15th, 17th, 21st, 22d, 23d, 26th; Banff; 22d, 23d, 24th, 25th, 28th; Prince Albert, 2d, 5th, 25th; Battleford, 5th, 14th, 17th, 22d, 23d, 26th.

DESCRIPTION OF TABLES AND CHARTS.

By ALFRED J. HENRY, Professor of Meteorology.

For description of tables and charts see page 214 of REVIEW for May, 1900.

TABLE I.—*Climatological data for Weather Bureau Stations, June, 1900.*

Stations.	Elevation of instruments: Barometer above sea level, feet.	Elevation of instruments: Thermometers above ground.	Elevation of instruments: Anemometer above ground.	Pressure, in inches: Mean actual, 8 a. m. + 8 p. m. ÷ 2.	Pressure, in inches: Mean reduced.	Pressure, in inches: Departure from normal.	Temperature of the air, in degrees Fahrenheit: Mean max. + mean min. ÷ 2.	Temperature: Departure from normal.	Temperature: Maximum.	Temperature: Date.	Temperature: Mean maximum.	Temperature: Minimum.	Temperature: Date.	Temperature: Mean minimum.	Temperature: Greatest daily range.	Mean wet thermometer.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches: Total.	Precipitation: Departure from normal.	Precipitation: Days with .01, or more.	Wind: Total movement, miles.	Wind: Prevailing direction.	Wind: Maximum velocity: Miles per hour.	Wind: Maximum velocity: Direction.	Wind: Maximum velocity: Date.	Clear days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Total snowfall.
New England.							63.6	+ 0.8										75	2.19	— 1.2										4.7	
Eastport	76	69	74	29.82	29.91	— .02	56.6	+ 1.5	84	21	65	41	5	48	34	53	51	85	4.00	+ 0.5	9	5,871	sw.	30	sw.	14	11	10	9	5.4	
Portland, Me	103	81	89	29.78	29.88	— .06	64.8	+ 1.5	91	28	74	44	5	56	30	57	51	66	1.25	— 2.1	5	5,220	s.	26	nw.	30	14	10	6	4.4	
Northfield	876	15	65	29.00	29.91	— .02	62.4	— 1.2	88	27	76	39	18	49	39	57	52	68	2.33	— 1.2	9	6,018	s.	36	se.	29	7	13	10	5.5	
Boston	125	115	181	29.79	29.92	— .03	68.6	+ 2.3	94	27	78	46	5	59	31	61	56	67	1.85	— 1.2	9	8,277	sw.	37	w.	30	13	10	7	4.4	
Nantucket	12	43	54	29.94	29.95	— .04	61.6	+ 0.4	78	25	67	47	5	56	20	58	56	86	1.50	— 1.3	8	7,817	sw.	33	ne.	4	8	11	11	6.2	
Woods Hole ‡	22	11	57	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Vineyard Haven §	...	20	55	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Block Island	26	11	70	29.92	29.95	— .03	62.5	+ 0.5	81	25	68	48	5	57	21	58	56	84	1.24	— 1.3	8	11,277	sw.	42	ne.	4	12	13	5	4.3	
Narragansett	...	10	...	...	...	...	64.9	+ 0.3	88	25	74	44	5	56	27	...	...	...	0.75	— 1.8	6	...	s.	...	...	...	22	3	5	...	
New Haven	106	117	140	29.83	29.94	— .04	67.6	+ 0.3	90	27	77	46	5	58	27	61	57	72	1.79	— 1.2	8	6,358	sw.	36	nw.	28	20	7	3	2.9	
Mid. Atlan. States.							71.4	+ 0.6										72	3.96	+ 0.3										5.5	
Albany	97	84	113	29.83	29.94	.00	70.4	+ 1.4	94	27	81	53	10	60	31	61	55	61	3.54	— 0.1	11	5,360	s.	30	w.	11	9	19	2	4.9	
Binghamton	875	79	90	...	...	...	66.8	+ 0.5	89	28	78	45	10	55	37	...	...	...	1.54	— 1.8	12	4,223	nw.	30	w.	29	4	16	10	6.3	
New York	314	108	346	29.63	29.96	— .02	71.4	+ 2.4	91	27	79	56	5	64	22	62	58	70	3.36	+ 0.2	11	8,447	sw.	54	nw.	28	10	10	10	5.6	
Harrisburg	374	94	104	...	...	...	72.2	+ 1.7	92	25	81	54	20	63	32	...	...	...	2.88	— 1.4	12	4,702	w.	30	w.	29	8	10	12	6.0	
Philadelphia	117	168	184	29.84	29.96	— .03	73.0	+ 1.3	93	25	82	55	17	64	29	64	59	66	2.82	— 0.3	12	7,010	sw.	28	sw.	27	11	8	11	5.5	
Atlantic City	52	68	76	29.92	29.97	.00	67.5	+ 0.7	90	25	74	51	5	61	25	63	61	82	2.33	— 0.9	8	7,600	sw.	28	nw.	30	10	14	6	4.6	
Cape May	17	47	51	29.97	29.99	.00	68.1	— 0.1	89	29	74	51	5	63	21	63	...	...	2.38	— 1.1	8	5,424	s.	22	ne.	17	7	16	7	5.6	
Baltimore	123	68	82	29.84	29.97	— .01	73.4	— 0.1	93	29	82	55	5	65	31	66	62	72	4.34	+ 0.3	11	3,715	sw.	19	n.	30	7	13	10	5.9	
Washington	112	59	76	29.85	29.97	— .02	72.2	— 1.0	93	29	82	54	5	63	29	66	62	74	10.94	+ 6.9	11	4,250	s.	32	ne.	8	11	10	9	5.2	
Cape Henry	...	5	34	...	...	...	74.6	+ 1.5	96	27	82	54	6	67	31	...	...	...	2.59	— 1.4	7	8,870	sw.	35	ne.	19	7	16	7	5.4	
Lynchburg	681	83	88	29.26	29.96	— .04	72.9	— 1.3	92	29	82	56	20	64	27	66	64	77	8.31	+ 4.8	14	2,497	ne.	25	w.	25	8	14	8	5.4	
Norfolk	91	102	111	29.89	29.99	— .01	74.7	— 0.4	92	29	83	56	6	67	29	68	66	77	2.52	— 1.7	8	7,011	sw.	38	nw.	25	9	12	9	5.4	
Richmond	144	82	90	...	...	...	74.6	...	92	27	84	56	20	66	28	...	...	...	3.08	...	10	3,685	sw.	30	nw.	14	4	16	10	6.2	
S. Atlantic States.							76.7	— 0.5										81	6.30	+ 1.3										5.8	
Charlotte	773	68	76	29.17	29.97	— .03	74.8	— 1.0	92	11	84	57	19	66	25	68	65	78	7.31	+ 2.7	16	4,492	sw.	29	sw.	27	3	8	19	7.6	
Hatteras	11	17	36	29.99	30.00	.00	75.0	+ 1.0	85	30	79	62	20	71	12	71	69	85	2.83	— 1.7	9	9,146	sw.	39	n.	19	13	13	4	4.3	
Kittyhawk	8	12	30	...	...	...	74.6	+ 0.4	92	*	81	58	6	68	24	...	...	...	3.65	— 1.0	8	10,228	sw.	...	...	...	18	9	3	3.6	
Raleigh	376	93	101	29.61	29.99	— .01	76.0	+ 0.3	94	29	85	57	20	67	24	69	66	77	8.47	+ 4.5	16	4,394	sw.	30	sw.	27	9	14	7	5.3	
Wilmington	78	82	90	29.93	30.01	+ .01	75.4	— 1.3	91	25	82	57	20	68	20	70	68	80	4.59	— 1.1	15	5,638	sw.	28	nw.	30	7	13	10	5.4	
Charleston	48	14	92	29.97	30.02	+ .01	78.4	— 0.7	92	28	83	66	19	74	15	72	70	78	6.29	+ 0.6	17	7,875	s.	29	s.	23	1	26	3	5.7	
Columbia	...	5	...	...	...	...	77.6	— 0.5	95	29	87	59	20	68	25	...	...	...	6.80	+ 2.6	17	...	sw.	...	...	...	2	14	14	6.8	
Augusta	180	89	103	29.79	29.98	.00	77.2	— 1.6	93	30	86	61	20	69	21	71	69	80	8.25	+ 3.6	18	4,237	s.	29	sw.	24	1	15	14	7.1	
Savannah	65	79	89	29.93	29.99	— .02	78.4	— 0.9	93	30	86	66	20	71	19	73	72	86	6.31	— 0.3	15	5,193	sw.	32	sw.	17	3	19	8	5.7	
Jacksonville	43	69	84	29.94	29.99	— .01	79.6	— 0.5	94	30	87	67	3	73	22	73	72	83	8.45	+ 3.0	16	5,701	se.	37	s.	7	1	16	13	7.0	
Florida Peninsula.							80.2	— 0.3										80	6.49	+ 0.4										5.5	
Jupiter	28	13	30	29.95	29.98	— .02	79.8	+ 0.8	87	18	84	70	8	75	15	75	73	82	2.90	— 3.8	16	6,840	se.	30	s.	22	7	18	5	5.4	
Key West	22	43	50	29.95	29.97	— .02	81.2	— 1.3	88	30	85	72	13	77	12	75	73	77	8.68	+ 4.7	11	5,192	se.	24	ne.	13	15	12	3	4.1	
Tampa	34	60	67	29.93	29.97	— .03	79.6	— 0.4	93	26	87	67	1	72	22	74	72	82	7.88	+ 0.3	20	4,455	e.	26	se.	23	0	21	9	7.1	
East Gulf States.							77.9	— 1.1										83	13.02	+ 7.9										6.6	
Atlanta	1,174	189	156	28.76	29.96	— .06	74.1	— 1.6	91	30	82	58	19	67	24	69	67	86	8.96	+ 5.0	19	5,611	se.	32	w.	27	0	8	22	8.3	
Macon	370	93	99	...	...	...	76.6	...	94	30	85	62	20	68	22	...	...	...	6.69	...	19	4,123	se.	29	s.	23	0	27	3	5.6	
Pensacola	56	78	90	...	...	...	78.4	— 1.0	92	10	84	68	19	73	19	...	...	...	11.79	+ 6.4	17	8,376	sw.	42	nw.	19	7	12	11	6.0	
Mobile	57	88	96	29.86	29.92	— .08	78.2	— 1.5	92	10	84	69	21	73	18	74	73	86	26.67	+20.8	22	6,208	s.	38	sw.	18	6	14	10	6.4	
Montgomery	223	100	112	29.69	29.92	— .08	77.2	— 2.2	92	30	85	65	5	70	27	71	69	83	7.23	+ 2.6	19	4,585	s.	37	n.	5	4	8	18	7.3	
Meridian	375	84	98	...	...	...	76.2	— 1.4	90	10	84	65	8	69	22	...	...	...	20.06	+15.2	25	3,966	sw.	27	nw.	17	3	13	14	7.1	
Vicksburg	247	65	73	29.62	29.87	— .12	77.3	— 1.8	94	10	85	63	18	70	28	72	70	82	11.33	+ 7.0	17	4,005	sw.	35	nw.	18	5	8	17	6.8	
New Orleans	51	112	120	29.84	29.90	— .06	80.0	— 0.3	92	10	87	68	19	73	20	74	72	80	5.10	— 1.5	19	5,283	s.	34	n.	18	9	14	7	5.7	
Port Eads	...	27	...	...	...	...	80.9	+ 1.0	99	18	87	68	*	75	27	...	...	...	4.31	...	11	...	sw.	...	...	...	18	2	10	...	
West Gulf States.							80.3	+ 1.2										79	3.98	+ 0.1										4.4	
Shreveport	249	77	84	29.61	29.87	— .09	80.3	+ 0.4	97	17	90	66	24	71	25	72	70	79	6.80	+ 3.0	11	3,955	s.	30	se.	1	11	4	15	5.7	
Fort Smith	457	74	82	29.38	29.86	— .06	78.0	+ 1.9	95	27	87	64	7	69	25	71	68	77	5.93	+ 1.6	10	3,960	e.	42	n.	7	7	15	8	5.9	
Little Rock	357	93	100	29.51	29.88	— .07	76.6	+ 0.4	94	10	85	64	17	68	26	71	70	85	5.52	+ 1.2	18	4,213	ne.	44	nw.	17	2	17	11	6.5	
Corpus Christi	18	42	50	29.84	29.86	— .08	82.2	+ 2.3	97	23	88	70	*	76	20	77	75	80	0.77	— 1.9	4	8,349	se.	36	ne.	4	22	7	1	2.3	
Fort Worth	670	106	114	...	...	...	81.9	...	102	26	93	63	24	71	28	...	...	...	0.84	...	3	7,202	s.	38	e.	11	17	12	1	3.2	
Galveston	54	84	88	29.81	29.86	— .09	81.8	+ 0.2	91	13	86	68	19	77	17	77	76	83	5.51	+ 0.6	9	5,357	s.	32	nw.	20	15	9	6	4.3	
Palestine	510	54	61	29.33	29.86	— .09	80.4	+ 1.2	95	11	90	66	14	71	27	73	70	77	2.55	— 1.7	9	4,495	s.	40	nw.	11	11	14	5	4.6	
San Antonio	701	95	104	29.13	29.85	— .06	82.8	+ 2.1	100	22	94	67	3	71	29	72	68	69	0.78	— 1.9	6	4,184	se.	24	nw.	4	19	11	0	3.0	
Ohio Val. & Tenn.							73.5	— 0.5										76	4.97	+ 0.8										6.0	
Chattanooga	762	106	112	29.17	29.96	— .05	74.6	— 0.6	90	11	82	61	22	67	23	69	67	83	6.25	+ 1.8	23	3,935	se.	30	nw.	29	2	14	14	7.0	
Knoxville	1,004	10	88	28.92	29.96	— .05	74.6	+ 1.0	92	10	83	59	19	66	27	68	67	83	6.42	+ 2.3	18	4,298	sw.	32	s.	6	11	11	8	5.0	
Memphis	397	140	154	29.48	29.90	— .06	75.7	— 2.4	93	10	82	65	14	69	24	71	69	88	11.45	+ 6.8	16	5,918	s.	38	w.	17	0	12	18	7.8	
Nashville	546	128	134	29.37	29.93	— .04	75.2	— 1.4	92	10	83	61	23	68	30	69	66	80	10.35	+ 6.0	19	4,422	s.	35	se.	5	3	10	17	7.4	
Lexington	989	75	102	...	...	...	72.5	— 1.3	89	29	81	53	4	64	28	...	...	...	2.19	— 2.1	14	5,887	s.	27	s.	1	4	19	7	5.7	
Louisville	525	114	136	29.37	29.93	— .04	74.8	— 0.3	93	29	84	54	3	66	29	67	63	74	3.28	— 1.0	14	5,680	ne.	35	nw.	29	8	12	10	5.8	
Evansville	434	72	82	...	...	...	74.5	...	91	29	82	55	3	67	24	...	...	...	11.44	...	16	5,017	ne.	28	w.	1	8	14	8	5.6	
Indianapolis	822	154	164	29.08	29.93	— .04	71.0	— 1.5	90	28	80	51	3	62	25	64	60	71	4.42	— 0.2	11	6,663	ne.	37	se.	26	6	15	9	5.9	
Cincinnati	628	152	157	29.29	29.95	— .02	73.3	— 0.5	92	29	81	53	4	65	27	66	62	71	1.01	— 3.4	9	5,101	ne.	26	nw.	29	6	13	11	6.2	
Columbus	824	87	100	29.00	29.94	— .04	71.9	+ 0.6	92	10	82	50	4	62	36	64	59	69	2.45	— 1.1	15	5,457	ne.	27	e.	24	10	8	12	5.6	
Pittsburg	842	116	123	29.06	29.94	— .04	72.4	+ 0.8	94	24	82	54	20	63	32	63	59	67	3.25	— 0.2	11	4,439	sw.	26	sw.	1	7	22	1	4.6	
Parkersburg	638	77	84	29.31	29.98	— .02	72.6	— 0.1	91	29	82	52	19	64	34	65	62	75	3.64	— 0.5	20	3,324	n.	32	n.	29	13	6	11	4.9	
Elkins	1,940	41	50	...	...	...	67.0	...	88	10	78	44	20	56	41	...	...	...	5.93	...	15	2,689	n.	23	sw.	12	5	11	14	6.3	
Lower Lake Region.							66.6	— 0.5										69	2.68	— 0.9										4.7	
Buffalo	767	178	206	29.14	29.94	— .01	66.2	+ 1.2	89	6	74	48	30	58	30	59	53	64	1.22	— 2.3	9	8,406	sw.	45	sw.	29	6	18	6	5.6	
Oswego	335	76	87	29.57	29.93	— .03	62.9	— 1.1	87	26	72	43	3	53	33	57	53	70	1.29	— 2.1	7	6,193	sw.	28	w.	30	12	12	6	4.2	
Rochester	523	81	90	29.38	29.94	— .01	67.4	+ 1.0	93	26	78	46	30	57	37	59	53	61	2.43	— 0.8	7	5,079	sw.	28	sw.	27	16	9	5	3.7	
Erie	713	92	102	29.20	29.95	.00	66.6	— 0.4	87	6	74	49	3	59	29	61	57	72	3.99	+ 0.1	11	6,678	ne.	35	n.	29	10	13	7	5.0	
Cleveland	762	190	201	29.15	29.95	— .02	66.4	— 0.6	86	6	74	50	3	59	32	61	57	72	1.53	— 2.3	9	9,068	ne.	54	w.	7	9	18	3	4.4	
Sandusky	629	62	70	29.28	29.94	— .03	68.6	— 0.4	90	26	76	51	3	61	32	62	58	71	3.60	— 0.3	11	5,680	ne.	31	w.	13	5	14	11	6.2	
Toledo	628	123	128	29.29	29.95	.00	67.7	— 2.1	87	26	76	48	3	59	32	61	57	72	3.41	0.0	9	6,773	ne.	31	w.	10	15	12	3	3.9	
Detroit	730	160	166	29.17	29.94	— .01	66.6	— 1.3	87	24	76	48	30	57	27	61	57	72	3.99	+ 0.3	10	6,098	ne.	29	sw.	27	12	12	6	4.9	
Upper Lake Region.							61.6	— 0.7										70	2.06	— 1.7										4.5	
Alpena	609	61	65	29.31	29.96	+ .02	60.5	+ 0.2	94	26	70	41	9	51	39	55	50	68	2.41	— 1.3	9	6,411	nw.	36	nw.	29	17	6	7	4.0	
Escanaba	612	43	57	29.30	29.95	+ .03	60.2	— 0.3	85	24	69	40	9	51	28	55	50	70	1.45	— 2.4	11	6,262	s.	32	nw.	29	10	13	7	4.5	
Grand Haven	632	55	64	29.27	29.94	.00	63.2	— 1.2	84	25	72	44	9	54	28	58	54	69	1.43	— 2.4	8	5,563	nw.	24	nw.	29	18	9	3	3.2	
Marquette	734	67	95	29.17	29.95	+ .01	59.8	+ 0.8	94	26	69	40	9	51	39	54	49	69	2.26	— 1.2	10	6,570	nw.	32	nw.	28	10	13	7	5.5	
Port Huron	638	70	108	29.30	29.98	+ .03	63.2	— 0.9	88	*	72	42	30	54	38	58	55	78	2.60	— 0.9	10	7,012	n.	36	n.	29	11	14	5	4.8	
Sault Ste. Marie	614	40	61	29.28	29.93	.00	57.9	— 2.3	85	26	68	36	12	48	34	52	47	68	3.16	+ 0.1	10	5,742	w.	38	nw.	29	16	6	8	4.3	
Chicago	823	241	274	29.09	29.96	+ .02	64.0	— 2.7	88	27	70	48	3	58	22	58	55	77	2.06	— 1.8	10	10,459	ne.	44	sw.	10	11	15	4	4.5	
Milwaukee	681	124	142	29.25	29.97	+ .02	63.2	— 0.1	90	26	72	46	3	55	25	56	51	65	1.88	— 2.2	8	6,512	ne.	30	ne.	22	12	9	9	4.6	
Green Bay	617	49	57	29.31	29.96	+ .01	64.5	— 2.2	92	26	76	42	9	53	31	58	52	66	2.30	— 1.0	10	5,307	e.	32	sw.	7	11	14	5	5.4	
Duluth	702	96	115	29.19	29.94	+ .02	59.2	+ 1.4	90	23	68	42	9	50	39	53	48	71	1.05	— 3.5	10	5,844	ne.	33	nw.	6	11	16	3	4.5	
North Dakota.							67.7	+ 3.7										57	1.84	— 1.9										3.7	
Moorhead	935	54	60	28.92	29.91	+ .04	66.2	+ 1.4	95	25	79	36	8	53	45	58	51	61	2.56	— 1.8	11	8,186	se.	47	se.	9	12	13	5	4.5	
Bismarck	1,674	16	29	28.14	29.86	.00	67.8	+ 4.0	94	25	80	39	8	56	43	59	52	59	2.32	— 1.2	5	8,056	se.	38	s.	14	17	9	4	3.8	
Williston	1,875	15	31	27.91	29.83	— .01	69.0	+ 5.7	102	22	83	38	13	55	41	57	48	51	0.65	— 2.8	6	8,571	s.	50	nw.	7	26	4	0	2.9	

TABLE I.—*Climatological data for Weather Bureau Stations, June, 1900*—Continued.

Stations.	Elevation of instruments			Pressure, in inches.			Temperature of the air, in degrees Fahrenheit.										Mean wet thermometer.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.			Wind.					Clear days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Total snowfall.
	Barometer above sea level, feet.	Thermometers above ground.	Anemometer above ground.	Mean actual, 8 a. m. + 8 p. m. ÷ 2.	Mean reduced.	Departure from normal.	Mean max. + mean min. ÷ 2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.					Total.	Departure from normal.	Days with .01, or more.	Total movement, miles.	Prevailing direction.	Maximum velocity. Miles per hour.	Maximum velocity. Direction.	Maximum velocity. Date.					
Upper Miss. Valley.							71.1	− 0.1											68	2.84	− 1.8										4.7	
Minneapolis	......	99	208	......	......	......	68.8	0.0	94	25	80	46	8	57	29				2.21	− 1.6	6	8,788	s.	48	se.	13	10	14	6	....	
St. Paul	837	114	124	29.04	29.92	.00	69.0	+ 1.8	95	25	80	47	8	58	30	58	51	56	1.98	− 2.4	6	5,611	se.	34	nw.	28	10	16	4	4.4	
La Crosse	714	70	78	......	......	......	68.8	− 0.1	94	26	80	49	11	57	31	....	....	....	2.19	− 2.3	7	4,347	s.	30	n.	26	18	12	0	3.2	
Davenport	606	71	79	29.28	29.92	− .02	70.4	− 0.5	90	7	80	53	4	61	26	62	57	64	1.01	− 3.4	5	5,389	ne.	25	sw.	27	11	14	5	4.5	
Des Moines	861	84	88	29.03	29.94	+ .03	70.1	0.0	91	26	80	50	11	60	29	63	59	69	4.89	− 0.5	7	5,517	se.	44	sw.	10	12	16	2	4.2	
Dubuque	698	101	109	29.21	29.94	+ .01	69.7	+ 0.2	92	25	80	51	11	60	33	60	53	58	2.04	− 3.2	6	5,012	nw.	29	nw.	10	18	10	2	3.2	
Keokuk	614	63	78	29.28	29.92	− .01	71.9	− 0.6	90	28	81	53	3	62	28	64	59	68	1.06	− 3.5	9	4,755	n.	30	nw.	27	13	11	6	4.0	
Cairo	356	87	93	29.53	29.91	− .04	74.5	− 0.9	90	29	82	61	3	67	23	70	68	87	10.07	+ 5.6	18	4,734	ne.	45	nw.	10	1	14	15	7.2	
Springfield, Ill	644	82	92	29.25	29.92	− .03	71.9	− 0.3	92	28	82	51	3	62	28	63	59	68	1.45	− 3.0	10	5,652	e.	42	nw.	10	8	13	9	5.5	
Hannibal	534	75	110	......	......	......	72.8	− 0.4	92	28	82	54	3	64	27	....	....	....	1.75	− 2.6	12	5,585	ne.	35	se.	24	8	12	10	5.0	
St. Louis	567	111	210	29.31	29.90	− .04	74.4	− 0.8	93	10	82	55	3	67	25	67	64	73	2.62	− 2.5	11	6,313	ne.	42	w.	13	6	13	11	6.0	
Missouri Valley.							72.1	+ 1.5											63	3.47	− 0.8										4.4	
Columbia	784	4	84	......	......	......	73.6	− 0.8	93	29	84	51	4	63	32	....	....	....	5.02	+ 0.5	13	4,686	e.	38	nw.	6	3	12	15	7.0	
Kansas City	963	78	95	28.91	29.91	− .01	73.8	+ 0.4	95	6	83	57	3	65	27	65	60	65	4.33	− 0.6	10	5,030	e.	42	nw.	27	8	14	8	5.1	
Springfield, Mo	1,324	100	103	28.53	29.89	− .05	73.0	+ 0.6	92	27	82	58	28	64	28	67	65	79	5.87	+ 1.6	12	5,437	ne.	63	nw.	17	11	16	3	4.4	
Topeka	......	81	....	......	......	......	74.2	+ 1.0	101	27	85	54	3	63	35	....	....	....	2.54	− 3.0	9	......	e.	....	......	....	5	25	0	4.6	
Lincoln	1,189	75	84	28.65	29.88	− .02	72.2	+ 1.1	98	26	84	51	2	61	30	63	58	65	2.50	− 1.9	7	6,991	s.	50	nw.	1	16	8	6	3.8	
Omaha	1,105	115	121	28.75	29.88	− .02	72.8	+ 1.3	94	26	82	52	2	63	26	63	57	63	3.07	− 2.6	6	5,391	se.	34	n.	1	15	12	8	3.9	
Valentine	2,598	39	40	27.23	29.86	− .04	70.6	+ 3.4	102	30	84	44	8	57	45	60	51	56	1.24	− 2.2	9	8,131	s.	44	s.	8	13	12	5	4.2	
Sioux City	1,135	96	164	......	......	......	69.8	− 0.5	96	26	82	48	2	58	39	....	....	....	4.32	+ 0.9	9	8,399	se.	50	se.	16	15	11	4	3.8	
Pierre	1,572	11	19	28.23	29.84	− .02	72.6	+ 4.4	102	30	85	46	2	60	42	59	50	50	3.39	0.0	8	9,701	se.	52	nw.	27	16	8	6	3.9	
Huron	1,306	56	67	28.52	29.88	− .02	69.0	+ 2.3	95	21	82	35	2	56	40	60	53	62	4.00	+ 0.4	8	9,417	se.	44	se.	9	18	11	1	3.5	
Yankton	1,233	52	58	......	......	......	71.4	+ 2.8	100	26	83	45	2	60	31	....	....	....	1.88	− 2.4	6	6,086	e.	36	nw.	27	14	10	6	4.8	
Northern Slope.							68.7	+ 5.9											53	0.77	− 1.6										3.8	
Havre	2,505	46	47	27.24	29.80	− .06	68.2	+ 6.9	108	21	83	37	1	54	46	55	46	51	0.62	− 2.4	6	8,301	w.	40	w.	5	21	8	1	3.6	
Miles City	2,371	42	50	27.35	29.75	− .10	73.6	+ 6.6	106	21	88	40	1	59	44	63	57	61	0.35	− 2.7	5	5,332	nw.	44	e.	26	22	6	2	3.0	
Helena	4,110	88	93	25.75	29.83	− .08	66.1	+ 6.7	102	21	78	39	1	54	38	54	42	49	0.19	− 2.2	5	5,877	sw.	44	sw.	15	12	11	7	4.9	
Kalispell	2,965	45	51	26.85	29.87	......	61.6	......	92	23	74	36	10	49	38	51	43	58	1.40	......	9	5,039	se.	34	se.	23	17	7	6	3.6	
Rapid City	3,234	46	50	26.54	29.77	− .10	69.8	+ 5.6	102	30	83	45	10	57	46	58	48	51	2.13	− 1.8	8	4,311	se.	24	se.	8	17	8	5	3.7	
Cheyenne	6,088	56	64	24.04	29.83	− .01	65.4	+ 4.5	92	29	80	40	10	51	40	51	38	43	1.01	− 0.5	7	6,839	s.	38	w.	14	11	16	3	4.1	
Lander	5,372	28	36	24.63	29.86	+ .01	65.8	+ 6.7	95	29	83	34	10	48	43	52	41	48	0.39	− 0.8	5	3,236	sw.	38	w.	14	11	18	1	4.2	
North Platte	2,821	43	52	27.03	29.87	.00	72.2	+ 4.3	100	26	85	52	8	59	39	63	58	65	1.42	− 2.0	6	6,577	se.	43	s.	15	20	9	1	3.6	
Middle Slope.							74.2	+ 2.6											61	1.93	− 1.2										3.8	
Denver	5,291	79	151	24.74	29.85	+ .08	70.5	+ 4.1	96	26	85	45	10	56	35	56	47	49	1.87	+ 0.5	4	5,906	sw.	51	nw.	14	20	9	1	3.4	
Pueblo	4,685	80	86	25.28	29.86	+ .05	71.5	+ 3.2	100	27	86	47	11	57	40	56	45	48	0.67	− 0.6	6	4,711	se.	46	nw.	2	21	9	0	3.1	
Concordia	1,398	42	47	28.45	29.89	.00	75.2	+ 2.9	104	27	88	53	3	62	35	65	60	63	2. 6	− 2.2	5	4,775	s.	35	sw.	9	11	17	2	4.9	
Dodge	2,509	44	52	27.33	29.85	+ .01	74.6	+ 2.0	101	27	87	55	10	62	34	65	61	68	2.62	− 0.7	8	6,715	se.	45	nw.	10	16	13	1	3.5	
Wichita	1,358	78	85	28.49	29.88	+ .02	75.8	+ 1.9	104	27	86	58	3	65	30	67	62	67	3.41	− 1.8	9	5,093	se.	39	n.	1	15	11	4	3.8	
Oklahoma	1,214	54	62	28.60	29.85	− .04	77.6	+ 1.2	98	27	88	59	15	67	27	69	65	70	0.74	− 2.4	5	5,821	s.	50	nw.	18	12	13	5	4.2	
Southern Slope.							76.8	+ 1.4											58	1.07	− 2.2										2.8	
Abilene	1,738	45	54	28.07	29.83	− .06	81.2	+ 2.8	105	17	93	63	2	70	30	68	61	56	0.30	− 3.0	2	5,777	se.	24	s.	16	17	13	0	3.1	
Amarillo	3,676	54	61	26.21	29.85	− .02	72.5	+ 0.1	98	26	84	53	1	61	33	63	56	61	1.84	− 1.4	8	8,004	s.	48	s.	9	21	8	1	2.4	
Southern Plateau.							79.3	+ 1.4											27	0.35	+ 0.1										2.3	
El Paso	3,762	10	110	26.09	29.77	− .01	82.2	+ 2.0	103	27	97	57	4	67	37	58	35	29	0.27	− 0.1	5	7,464	e.	52	nw.	24	19	11	0	2.7	
Santa Fe	7,013	47	50	23.31	29.86	.00	67.8	+ 2.5	89	27	80	48	10	56	28	52	35	37	1.44	+ 0.5	8	4,986	se.	34	sw.	14	16	13	1	3.6	
Flagstaff	6,907	12	25	23.38	29.96	......	61.2	......	90	27	80	32	15	42	49	....	....	....	0.72	......	3	......	sw.	....	......	....	10	10	10	....	
Phenix	1,108	47	57	28.63	29.75	− .02	86.1	+ 2.3	110	27	102	63	4	70	39	57	30	16	0.00	− 0.1	0	3,136	w.	18	sw.	13	25	5	0	1.6	
Yuma	141	16	50	29.56	29.70	− .05	85.2	+ 0.3	109	20	101	64	16	69	39	64	49	37	0.00	0.0	0	4,045	w.	24	s.	13	26	2	2	1.3	
Independence	3,910	51	58	25.89	29.72	− .06	75.4	0.0	98	29	89	53	10	62	34	52	24	18	0.04	0.0	2	6,263	nw.	41	w.	13	22	7	1	2.2	
Middle Plateau.							70.8	+ 5.3											28	0.16	− 0.4										3.3	
Carson City	4,720	82	92	25.24	29.88	.00	66.0	+ 5.2	91	27	81	41	16	51	40	50	35	38	0.38	0.0	3	5,057	w.	40	sw.	15	12	10	8	4.4	
Winnemucca	4,344	59	70	25.60	29.85	− .01	67.3	+ 4.9	95	20	84	40	1	51	43	50	29	32	0.12	− 0.7	3	6,357	sw.	43	nw.	8	12	11	7	4.4	
Cedar City	5,850	36	47	24.25	29.84	......	71.4	......	94	20	83	49	11	60	30	49	21	18	0.11	......	3	5,564	se.	28	sw.	30	18	9	3	2.8	
Salt Lake City	4,366	105	110	25.55	29.80	− .06	73.8	+ 6.9	101	28	87	47	10	60	34	53	32	25	0.08	− 0.7	3	4,671	se.	30	n.	9	28	2	0	1.2	
Grand Junction	4,608	43	50	25.31	29.79	......	76.2	+ 4.1	104	28	92	50	11	60	42	54	32	26	0.04	− 0.3	3	4,635	se.	31	e.	23	12	18	0	3.5	
Northern Plateau.							67.9	+ 5.4											48	0.58	− 0.7										4.1	
Baker City	3,471	53	58	26.40	29.90	− .04	63.6	+ 6.9	91	20	76	42	30	51	37	52	42	53	1.55	0.0	6	3,771	s.	25	se.	15	13	4	13	4.9	
Boise	2,739	61	68	27.07	29.84	− .05	70.0	+ 4.3	103	20	85	44	9	55	39	55	42	45	0.20	− 0.6	3	3,202	nw.	55	sw.	13	18	10	2	3.1	
Pocatello	4,482	48	56	25.41	29.80	− .08	69.9	+ 7.9	97	21	85	41	10	55	40	52	36	36	0.10	− 1.0	1	7,711	s.	36	sw.	23	22	7	1	2.8	
Spokane	1,943	99	107	27.89	29.89	− .03	66.0	+ 3.6	93	20	78	42	9	54	39	53	42	48	0.42	− 1.2	5	4,877	sw.	26	w.	5	9	10	11	5.8	
Walla Walla	1,000	65	73	28.85	29.89	− .04	69.8	+ 4.2	98	20	82	46	9	58	38	59	51	56	0.65	− 0.7	5	4,057	s.	30	sw.	5	16	12	2	3.7	
N. Pac. Coast Reg.							59.6	− 1.4											76	4.27	+ 2.0										6.0	
Neah Bay	50	7	24	29.93	29.98	− .04	54.6	− 1.4	70	13	60	42	11	50	22	53	52	90	11.45	+ 6.6	16	4,370	w.	28	w.	20	10	4	16	6.2	
Port Crescent	259	15	20	......	......	......	54.6	+ 0.9	79	12	62	36	3	47	37	....	....	....	2.76	+ 1.2	14	3,370	w.	18	sw.	28	8	10	12	6.0	
Seattle	123	114	121	29.86	29.99	− .04	61.9	+ 2.5	86	12	70	48	3	54	33	55	51	73	2.51	+ 1.3	13	4,039	se.	20	se.	5	9	10	11	5.8	
Tacoma	213	113	120	......	......	......	61.4	+ 3.2	85	12	70	45	9	52	34	....	....	....	3.22	+ 1.4	14	4,225	n.	24	n.	7	6	12	12	6.3	
Astoria	20	57	64	30.02	30.04	− .01	57.8	+ 0.2	70	9	64	44	9	52	26	55	....	....	6.60	+ 3.5	14	4,859	sw.	25	se.	19	12	3	15	6.0	
Portland, Oreg	154	203	213	29.82	29.98	− .07	63.4	+ 1.8	90	12	72	49	2	54	31	56	51	70	1.76	− 0.1	12	5,612	nw.	28	sw.	13	10	5	15	5.9	
Roseburg	518	56	67	29.40	29.96	− .09	63.4	+ 2.4	87	12	74	44	9	53	38	56	51	70	1.58	+ 0.3	8	2,707	nw.	19	n.	8	9	7	14	5.9	
Mid. Pac. C'st Reg.							62.7	+ 0.9											67	0.67	+ 0.1										4.4	
Eureka	62	60	69	29.95	30.01	− .02	56.2	+ 1.5	70	20	60	48	4	52	16	53	52	87	1.70	+ 0.4	5	5,291	nw.	36	nw.	5	8	9	13	6.1	
Mount Tamalpais	2,375	11	18	27.49	29.94	......	62.2	......	86	5	70	44	13	54	26	51	41	55	0.31	......	5	12,312	w.	67	nw.	20	20	4	6	3.1	
Red Bluff	332	50	56	29.51	29.85	− .03	76.8	+ 2.2	104	6	90	53	16	63	39	60	49	45	0.94	+ 0.4	4	3,727	se.	25	n.	30	22	5	3	2.2	
Sacramento	69	106	117	29.78	29.86	− .03	69.4	+ 0.8	99	6	84	49	16	55	38	59	53	62	T.	− 0.2	0	6,849	sw.	25	sw.	24	18	7	5	3.7	
San Francisco	155	161	167	29.79	29.95	+ .01	57.6	− 0.8	74	5	64	47	2	52	22	54	52	85	0.05	− 0.2	2	10,327	sw.	41	w.	19	15	11	4	3.9	
Point Reyes Light	......	12	16	......	......	......	53.7	+ 0.7	68	22	59	44	2	48	18	....	....	....	0.02	......	1	14,795	nw.	72	nw.	30	7	1	22	7.4	
S. Pac. Coast Reg.							68.2	+ 1.7											66	0.02	− 0.1										3.6	
Fresno	330	67	70	29.48	29.82	− .04	77.3	+ 3.3	104	6	94	51	3	61	41	58	42	34	T.	− 0.1	0	5,249	nw.	17	nw.	16	25	3	2	1.7	
Los Angeles	338	74	82	29.54	29.89	− .02	67.4	+ 1.7	89	6	78	52	15	57	36	60	57	79	T.	− 0.1	0	3,396	w.	14	sw.	14	9	18	3	4.2	
San Diego	87	94	102	29.80	29.90	− .02	64.4	+ 0.3	87	7	69	56	15	60	24	59	57	80	0.08	0.0	2	4,172	sw.	22	nw.	7	17	7	6	4.5	
San Luis Obispo	201	10	46	29.73	29.95	+ .02	63.9	+ 1.5	93	19	76	45	30	51	41	55	50	69	0.01	− 0.1	1	3,645	w.	20	n.	19	15	9	6	3.9	
West Indies.																																
Basseterre	29	41	54	29.98	30.01	....	80.8	....	88	14	85	71	27	76	15	75	73	76	2.71	....	17	7,656	e.	28	e.	16	3	17	10	6.0	
Bridgetown	30	57	65	29.95	29.98	....	80.6	....	88	22	86	72	25	75	14	75	73	79	1.89	− 3.0	14	6,975	e.	28	se.	18	6	10	14	6.2	
Cienfuegos	52	62	67	29.90	29.95	....	80.4	....	92	25	89	68	5	72	24	74	72	79	4 94	....	12	4,796	ne.	23	s.	23	15	12	3	3.8	
Havana	57	83	100	29.91	29.97	....	79.8	....	91	24	86	68	1	73	16	75	74	85	3.43	− 3.7	11	6,359	e.	32	ne.	1	7	13	10	5.7	
Kingston	286	38	52	29.63	29.93	....	80.1	....	92	26	88	70	1	72	21	74	71	78	3.19	....	11	4,357	ne.	27	se.	27	5	18	7	5.9	
Port of Spain	40	65	66	29.91	29.95	....	79.3	....	90	13	86	69	23	73	19	75	73	83	13.89	....	24	3,214	e.	16	e.	14	5	9	16	6.5	
Puerto Principe	352	55	62	29.62	29.96	....	79.8	....	95	17	90	66	6	70	26	74	73	87	7.50	....	18	4,613	ne.	27	s.	17	9	12	9	5.8	
Roseau	25	37	47	29.96	29.98	....	80.8	....	90	27	87	73	30	75	16	73	70	73	5.10	....	21	3,748	e.	20	s.	10	2	13	15	6.9	
San Juan	82	48	73	29.91	29.99	....	79.6	....	91	14	85	72	2	74	15	75	73	81	7.50	+ 2.6	18	7,976	se.	39	se.	17	10	7	13	5.6	
Santiago de Cuba	82	26	33	29.85	29.93	....	82.0	....	93	15	90	67	1	74	22	74	72	76	3.15	....	10	2,268	s.	19	ne.	1	3	20	7	6.0	
Santo Domingo	57	37	44	29.94	30.00	....	78.4	....	89	25	84	69	7	73	15	75	74	87	8.53	....	20	3,717	n.	17	se.	29	5	17	8	6.1	
Willemstad	75	39	46	29.82	29.89	....	83.2	....	93	12	88	76	28	79	14	76	74	77	0.12	....	4	9,871	e.	28	e.	18	9	14	7	5.0	

NOTE.—The data at stations having no departures are not used in computing the district averages. Letters of the alphabet denote number of days missing from the record. *Two or more dates. †Received too late to be considered in departures, etc. ‡Station closed June 11, 1900. §Station closed June 18, 1900.

TABLE II.—*Climatological record of voluntary and other cooperating observers, June, 1900.*

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Alabama.	°	°	°	*Ins.*	*Ins.*
Ashville	92	62	74.7	11.98	
Bermuda	97	60	77.6	14.23	
Birmingham	95	64	77.5	12.09	
Brewton	98	63	78.6	12.96	
Bridgeport	......	......	......	7.83	
Citronelle	90	68	77.4	19.36	
Clanton	87	58	74.2	8.37	
Daphne	90[e]	67[e]	77.8[e]	11.77	
Decatur	96	61	76.4	11.51	
Demopolis	......	......	......	10.79	
Elba	96	59	76.7	10.73	
Eufaula *a*	94	61	78.6	8.37	
Eutaw	93	66	77.6	10.84	
Evergreen	90	65	76.0	10.75	
Florence *a*	......	......	......	13.92	
Florence *b*	93	62	75.6	13.87	
Fort Deposit	93	66	77.6	8.01	
Gadsden	96	60	76.6	9.09	
Goodwater	95	61	76.5	10.35	
Greensboro	90	67	76.6	8.34	
Hamilton	90	63	75.2	14.08	
Healing Springs	93	66	77.4	8.95	
Highland Home	90	65	76.4	6.36	
Livingston *a*	93	67	77.6	13.91	
Lock No. 4	91	63	77.2	13.06	
Madison Station	93	61	75.0	13.03	
Maplegrove	35	59	75.4	9.91	
Marion	96	64	78.4	5.55	
Newbern	91	68	77.4	7.16	
Newburg	90	62	75.6	10.86	
Newton	90	60	73.8	7.78	
Oneonta	90	62	74.2	11.48	
Opelika	93	60	75.0	9.89	
Oxanna	89	62	75.4	10.86	
Pineapple	97	64	78.2	10.60	
Prattville	92	63	76.8	......	
Pushmataha	91	67	77.6	14.66	
Riverton	91	60	74.8	9.96	
Scottsboro	91	60	75.2	7.14	
Selma	93	60	77.0	8.51	
Talladega	......	60	....	8.72	
Tallassee	......	......	......	6.48	
Thomasville	92	64	76.0	8.48	
Tuscaloosa	93	64	76.8	13.53	
Tuscumbia	93	61	76.0	15.61	
Tuskegee	95	68	76.6	7.05	
Union Springs	93	63	77.7	6.51	
Uniontown	94	64	77.4	7.92	
Valleyhead	90	62	75.4	12.47	
Warrior	......	......	......	17.75	
Wetumpka	96	64	78.6	6.96	
Alaska.					
Juneau	76	36	53.9	2.21	
Kenai	77	30	46.8	0.55	
Killisnoo	70	33	50.4	4.30	
Orca	......	......	......	4.59	
Sitka	71	34	51.8	3.13	
Arizona.					
Allaire Ranch	......	......	......	T.	
Arizona Canal Co. Dam	108	58	82.2	0.00	
Aztec *[5]	119	79	98.1	0.00	
Benson *[1]	106	73	90.0	0.00	
Bisbee	98	56	78.0	T.	
Bowie *[5]	105	78	90.0	0.00	
Buckeye	106	55	82.1	0.00	
Camp Creek	105	58	80.4	0.00	
Casagrande *[5]	110	77	93.4	0.00	
Champie Camp	116	60	85.8	0.00	
Cochise	......	......	......	0.00	
Congress	105	62	84.2	0.00	
Dragoon Summit *[1]	93	66	80.2	0.00	
Dudleyville	110	50	80.0	0.10	
Fort Apache	100	43	71.6	0.00	
Fort Defiance	96	34	66.5	0.20	
Fort Grant	100	58	79.3	T.	
Fort Huachuca	100	54	78.4	T.	
Fort Mohave	117	60	88.2	0.00	
Gilabend *[1]	112	75	92.8	0.01	
Holbrook	105	40	72.1	0.05	
Ingleside	112	59	85.0	0.00	
Jerome	96	59	78.6	0.00	
Maricopa *[1]	110	79	94.0	0.00	
Mesa	111	57	83.4	0.00	
Mount Huachuca	102	54	77.9	0.10	
Music Mountain	110	70	88.9	T.	
Natural Bridge	......	......	......	0.00	
Nogales	106	51	78.2	T.	
Oracle	98	57	79.4	0.08	
Oro	......	......	......	0.10	
Pantano *[1]	100	70	81.1	0.00	
Parker	117	57	87.4	T.	
Peoria	114	55	85.9	0.00	
Phenix	111	55	83.6	0.00	
Pima	111	47	79.3	0.07	
Pinal Ranch	......	......	......	T.	
Prescott	102	38	68.6	T.	
Arizona—Cont'd.	°	°	°	*Ins.*	*Ins.*
Russellville	......	......	......	0.00	
San Carlos	112	52	82.6	0.00	
Sentinel *[1]	115	75	94.5	0.00	
Signal	117	52	83.8	T.	
Silverking	......	......	......	0.00	
Snowflake	100	30	67.6	0.03	
Strawberry	100	35	66.0	0.00	
Supai	108	61	83.0	0.00	
Texas Hill *[1]	120	76	90.3	0.00	
Tonto	113	47	79.8	0.00	
Tucson	108	57	82.6	0.17	
Vail *[1]	105	76	83.6	0.00	
Walnut Grove	......	......	......	0.00	
Willcox *[1]	102	70	86.6	0.00	
Yarnell	......	......	......	0.00	
Arkansas.					
Amity	93	64	76.0	10.09	
Arkadelphia	96	62	78.5	3.05	
Arkansas City	......	......	......	6.70	
Batesville	95	61	76.9	5.24	
Beebranch	......	......	......	7.55	
Blanchard Springs	99	62	78.3	10.75	
Brinkley	94	64	77.0	8.20	
Camden *a*	......	......	......	7.72	
Camden *b*	97	62	77.6	7.85	
Canton	94	59	76.7	5.74	
Conway	97	63	78.7	6.62	
Corning	92	61	75.1	6.55	
Dallas	95	63	77.8	5.29	
Dardanelle	......	......	......	4.84	
Elon	......	......	......	16.11	
Fayetteville	94	54	73.5	3.94	
Forrest City	94	64	77.8	10.33	
Fulton	......	......	......	5.80	
Hardy	93	62	75.8	4.27	
Helena *a*	......	......	......	10.50	
Helena *b*	94	65	77.0	9.48	
Hot Springs *b*	......	......	......	5.10	
Jonesboro	100	62	79.1	8.08	
Keesees Ferry	97	61	76.2	4.10	
Lacrosse	96	60	74.9	4.88	
Lonoke	96	63	77.6	8.98	
Luna Landing	94	65	77.7	8.29	
Lutherville	94	59	75.2	6.61	
Malvern	95	63	76.3	6.92	
Marianna	95	63	77.2	8.34	
Marvell	95	60	77.8	8.42	
Mossville	91	54	73.5	11.04	
Mount Nebo	90	58	72.6	6.32	
New Gascony	96	65	78.6	5.36	
Newport *a*	......	......	......	7.56	
Newport *b*	96	57	76.6	8.42	
Newport *c*	96	63	77.2	8.93	
Oregon	96	52	75.0	5.61	
Osceola	96	65	78.9	7.72	
Ozark	97	64	77.9	4.78	
Pinebluff	98	65	78.6	5.81	
Pocahontas	90	62	74.6	4.82	
Pond	95	52	74.2	6.97	
Prescott	98	64	79.4	4.68	
Rison	96	66	79.1	4.35	
Russellville	95	62	76.9	7.70	
Silversprings	94	57	73.6	5.35	
Spielerville	97	60	77.1	6.05	
Stamps	98	65	80.4	9.84	
Stuttgart	95	64	77.6	4.58	
Texarkana	99	55	79.8	5.01	
Warren	97	63	77.5	9.17	
Washington	95	62	77.9	8.07	
Wiggs	94	61	75.2	5.22	
Winslow	88	56	71.8	4.96	
Witts Springs	99	43	74.6	5.15	
California.					
Agnew	96	45	68.1	0.10	
Angiola	105	48	76.0	0.00	
Bakersfield	104	52	79.3	0.00	
Ballast Point L. H	......	......	......	0.03	
Bear Valley	......	......	......	0.47	
Berkeley	80	50	62.1	0.08	
Beverly	......	......	......	T.	
Bishop	......	......	......	0.12	
Boca *[1]	90	34	56.1	2.67	
Bodie	83	21	53.2	0.82	
Bowman	......	......	......	0.40	
Branscomb	......	......	......	2.39	
Caliente *[1]	99	61	79.7	0.00	
Campbell	93	40	64.8	0.01	
Cape Mendocino L. H	......	......	......	2.80	
Cedarville	90	40	64.5	0.27	
Chico *[1]	110	60	78.7	0.55	
Cisco *[1]	80	40	56.4	0.60	
Claremont	95	43	67.0	T.	
Corning *[1]	106	64	78.6	0.30	
Coronado	77	58	65.1	......	
Cottonwood	......	......	......	1.12	
Crescent City	67	41	56.0	2.43	
California—Cont'd.	°	°	°	*Ins.*	*Ins.*
Crescent City L. H	......	......	......	2.57	
Cuyamaca *[5]	82	37	66.8	0.10	
Delano *[1]	108	61	74.7	0.00	
Delta *[1]	99	59	74.0	1.56	
Deweyville	105	53	78.7	0.00	
Drytown	100	45	71.3	0.16	
Dunnigan *[1]	105	60	77.5	0.00	
Durham *[1]	105	54	75.7	0.61	
East Brother L. H	......	......	......	0.05	
Edmanton *[1]	89	40	61.5	0.61	
Elcajon	97	45	67.8	0.19	
Elmdale	104	42	72.9	0.12	
Elsinore	108	45	71.8	0.00	
Escondido	91	40	67.1	T.	
Fallbrook	98	48	69.5	T.	
Folsom City *[1]	102	27	74.0	T.	
Fordyce Dam	......	......	......	0.85	
Fort Ross	74	42	57.6	0.44	
Georgetown	94	44	69.8	0.13	
Gilroy (near)	94	40	65.6	0.00	
Goshen *[5]	102	65	86.4	0.00	
Grand Island *[5]	104	50	74.8	0.14	
Grass Valley	......	......	......	T.	
Greenville	93	31	62.0	0.38	
Hanford	102	46	76.5	0.00	
Healdsburg	101	37	66.5	0.13	
Hollister	89	42	64.1	0.03	
Humboldt L. H	......	......	......	2.50	
Indio *[1]	109	70	88.6	0.00	
Iowa Hill *[1]	90	52	68.6	0.10	
Irvine	92	62	78.8	0.03	
Jackson	82	42	61.8	0.06	
Jolon	......	......	......	0.00	
Kennedy Gold Mine	95	44	67.8	0.18	
King City *[1]	84	48	59.7	0.00	
Kono Tayee	92	53	71.2	T.	
Lamesa	......	......	......	T.	
Lankershim	106	51	76.4	T.	
Laporte *[1]	86	41	58.6	0.36	
Las Fuentes Ranch	......	......	......	0.00	
Legrand	104	43	75.0	T.	
Lemoncove	......	......	......	0.00	
Lemoore *a* *[1]	102	59	85.6	0.00	
Lick Observatory	83	42	63.8	T.	
Lime Point L. H	......	......	......	0.03	
Lodi	100	46	71.0	T.	
Los Gatos *b*	100	42	66.2	T.	
Mammoth *[1]	110	62	89.7	0.00	
Manzana	102	51	77.0	0.00	
Mare Island L. H	......	......	......	0.00	
Merced *b*	105	40	74.4	T.	
Milton (near) *[5]	100	48	72.2	0.01	
Modesto *[1]	100	57	75.2	0.00	
Mohave *[1]	105	60	78.6	0.00	
Mokelumne Hill *[5]	......	50	65.7	0.05	
Monterio	84	48	68.1	0.00	
Monterey *[5]	76	55	64.7	0.00	
Morena	......	......	......	0.50	
Mountainview	......	......	......	0.13	
Mutah Flat	......	......	......	0.00	
Napa *b*	94	45	66.8	T.	
Needles	118	70	91.8	0.00	
Nevada City	90	41	64.0	0.03	
Newhall *[1]	104	60	72.7	0.00	
North Bloomfield	91	43	66.8	T.	
North Ontario	94	50	68.0	0.00	
North San Juan *[1]	95	52	70.7	T.	
Oakland *a*	83	50	63.8	0.08	
Ogilby *[5]	112	80	94.4	0.00	
Oleta *[1]	93	51	67.6	0.03	
Orland *[1]	107	60	79.0	0.31	
Palermo	106	46	74.8	0.20	
Paso Robles *b*	99	43	68.5	T.	
Peachland *[5]	86	51	65.4	0.31	
Piedras Blancas L. H	......	......	......	0.00	
Pigeon Point L. H	......	......	......	0.00	
Pilot Creek	......	......	......	T.	
Pine Crest	86	50	64.7	0.14	
Point Ano Nuevo L. H	......	......	......	0.00	
Point Arena L. H	......	......	......	0.72	
Point Bonita L. H	......	......	......	0.39	
Point Conception L. H	......	......	......	0.00	
Point Firmin L. H	......	......	......	0.00	
Point George L. H	......	......	......	1.72	
Point Hueneme L. H	......	......	......	0.02	
Point Lobos	66	47	56.4	0.00	
Point Loma L. H	......	......	......	0.00	
Point Montara L. H	......	......	......	0.12	
Point Pinos L. H	......	......	......	0.10	
Point Sur L. H	......	......	......	0.06	
Pomona (near)	96	45	68.8	0.00	
Poway *[5]	94	60	64.6	0.05	
Quincy	92	37	64.8	0.25	
Ranch House	......	......	......	0.05	
Redding	101	51	75.3	1.38	
Redlands	102	49	72.2	0.00	

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.)			Precipitation.	
	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
California—Cont'd.	°	°	°	*Ins.*	*Ins.*
Represa	96	50	72.0	T.	
Riovista	99	50	69.8	0.10	
Riverside	100	50	71.4	0.00	
Roe Island L. H	.....	.....	.....	0.00	
Rosewood	107	45	74.5	0.70	
Sacramento *a*	99	48	71.6	T.	
Salinas*[1]	78	49	63.3	0.00	
Salton*[5]	121	79	99.4	0.00	
San Bernardino	104	44	71.4	T.	
San Jacinto	108	46	73.6	0.00	
San Jose	91	45	67.8	0.01	
San Leandro*[1]	80	55	64.3	0.00	
San Luis L. H	.....	.....	.....	0.00	
San Mateo*[1]	87	57	66.9	0.00	
San Miguel*[1]	97	52	70.3	0.00	
Santa Barbara L. H	.....	.....	.....	0.00	
Santa Clara *a*	.....	.....	.....	0.05	
Santa Cruz *b*	89	41	62.1	T.	
Santa Cruz L. H	.....	.....	.....	0.02	
Santa Monica*[1]	74	59	63.7	0.00	
Santa Paula	92	52	69.8	0.00	
Santa Rosa*[1]	94	52	66.3	0.16	
Shasta	106	51	76.0	1.85	
Sierra Madre	91	50	68.5	0.10	
Sonoma	.....	.....	.....	0.18	
S. E. Farallone L. H	.....	.....	.....	0.00	
Stanford University	94	47	65.2	T.	
Stockton	96	50	69.3	0.00	
Susanville	87	39	64.2	0.40	
Tehama*[1]	103	63	83.0	0.53	
Tejon Ranch	98	57	77.4	0.02	
Templeton*[1]	103	63	83.0	0.53	
Thermalito	108	50	74.9	0.26	
Trinidad L. H	.....	.....	.....	1.88	
Truckee*[1]	88	40	55.7	1.01	
Tulare *b*	108	50	78.7	0.00	
Tulare *c*	.....	.....	.....	0.00	
Ukiah	102	43	70.2	0.36	
Upperlake	100	45	69.3	0.35	
Upper Mattole*[1]	88	40	56.8	1.84	
Vacaville *a**[1]	102	54	71.4	T.	
Ventura	75	52	63.4	T.	
Visalia *b*	103	42	76.0	0.00	
Volcano Springs*[1]	120	78	94.5	0.00	
Walnutcreek	102	55	73.1	0.00	
Westpoint	.....	.....	.....	0.07	
West Saticoy	.....	.....	.....	0.00	
Wheatland	102	48	72.8	T.	
Williams*[1]	105	60	80.5	0.05	
Wilmington*[1]	82	57	66.8	T.	
Wire Bridge*[5]	98	55	74.9	T.	
Yerba Buena L. H	.....	.....	.....	0.00	
Yreka	93	42	66.4	1.36	
Yuba City*[5]	104	56	76.8	0.16	
Colorado.					
Arkins	.....	.....	.....	0.45	
Boulder	91	44	69.6	0.49	
Boxelder	.....	.....	.....	0.54	
Breckenridge	75	27	49.6	1.12	
Buenavista	.....	.....	.....	1.12	
Canyon	98	44	70.0	0.88	
Castlerock	92	40	64.4	1.80	
Cedaredge	98	41	68.4	0.40	
Cheyenne Wells	98	49	70.8	2.47	
Clearview	78	30	53.6	3.05	
Collbran	.....	.....	.....	0.28	
Colorado Springs	92	44	65.4	1.03	
Cope	100	50	71.4	2.08	
Crook	103	46	73.6	1.67	
Delta	106	41	71.2	0.09	
Dumont	.....	.....	.....	2.33	
Durango	94	34	64.8	0.13	
Fairview	86	33	59.1	1.02	
Fort Collins	94	41	67.0	0.82	
Fort Morgan	99	45	70.8	0.94	
Fox	.....	.....	.....	2.65	
Garnett	88	31	59.1	0.13	
Gilman	.....	.....	.....	0.94	
Gleneyrie	88	43	64.8	0.86	
Greeley	97	41	69.0	0.31	
Grover	.....	.....	.....	0.75	
Gunnison	90	28	59.3	0.78	
Hamps	94	45	65.1	2.20	
Hoehne	97	43	67.4	1.99	
Holly	.....	.....	.....	2.60	
Holyoke (near)	102	45	72.0	1.64	
Hugo	.....	.....	.....	4.50	
Husted	90[h]	40[h]	61.8[h]	2.29[h]	
Lake Moraine	76	31	52.1	2.09	
Lamar	106	54	78.6	2.54	
Laporte	.....	.....	.....	0.59	
Las Animas	103	52	73.4	0.40	
Lay	101	31	65.3	1.89	
Leadville*[1]	82	32	51.7	0.62	
Leroy	99	45	70.0	0.78	
Longs Peak	81	32	54.6	0.80	T.

Stations.	Temperature. (Fahrenheit.)			Precipitation.	
	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
Colorado—Cont'd.	°	°	°	*Ins.*	*Ins.*
Mancos	92	33	62.0	1.15	
Marshall Pass	.....	.....	.....	0.61	
Meeker	102	34	66.8	0.49	
Minneapolis	103	49	74.0	1.49	
Mitchell	.....	.....	.....	0.90	
Montrose	.....	.....	.....	0.43	
Moraine	87	35	58.6	0.91	
Pagoda	97	32	63.1	0.70	
Parachute	102	44	72.4	0.44	
Perrypark	.....	.....	.....	0.70	
Rangely	105	33	68.1	0.67	
Rockyford	101	48	72.0	1.47	
Rogers Mesa	.....	.....	.....	0.04	
Ruby	.....	.....	.....	4.30	
Saguache	92	36	62.2	0.84	
Salida	98	34	63.4	1.54	
San Luis	91	34	61.0	0.44	
Santa Clara	89	38	62.1	2.98	
Sapinero	.....	.....	.....	0.40	
Sargents	.....	.....	.....	1.10	
Seibert	.....	.....	.....	3.06	
Silt	96	40	68.7	0.11	
Springfield	.....	.....	.....	2.55	
Strickler Tunnel	.....	.....	.....	1.90	2.3
Sugarloaf	89	34	59.9	0.95	
Trinidad	97	44	68.3	2.46	
Troutvale	85	23	51.8	0.91	
T. S. Ranch	95	45	70.6	0.67	
Twinlakes	.....	.....	.....	T.	
Vilas	.....	.....	.....	2.27	
Wagon Wheel	85	21	51.8	0.15	
Walden	92	31	58.9	0.29	
Wallet	.....	.....	.....	5.62	
Westcliffe	85	32	58.0	3.66	
Wray	98	49	72.4	2.35	
Yuma	.....	.....	.....	0.72	
Connecticut.					
Bridgeport	92	44	69.0	2.10	
Canton	88	39	65.3	3.81	
Colchester	89	38	66.4	1.80	
Falls Village	.....	.....	.....	4.45	
Hartford *b*	90	53	69.0	4.27	
Hawleyville	90	43	66.8	4.31	
Middletown	94	38	67.8	2.08	
New London	93	52	69.5	1.90	
North Grosvenor Dale	91	37	66.8	3.66	
Norwalk	94	43	69.4	2.03	
Southington	88	41	67.2	3.13	
Storrs	89	40	66.0	4.32	
Voluntown	91	37	65.7	2.23	
Wallingford	.....	.....	.....	1.61	
Waterbury	93	41	68.8	3.02	
West Cornwall	86	47	65.4	4.42	
West Simsbury	.....	.....	.....	2.79	
Winsted	88	52	68.6	.....	
Delaware.					
Milford	.....	.....	.....	5.08	
Millsboro	95	45	71.8	4.00	
Newark	90	50	71.2	5.20	
Seaford	95	52	73.6	3.88	
District of Columbia.					
Distributing Reservoir*[5]	90	60	73.6	7.91	
Receiving Reservoir*[5]	90	60	73.2	8.20	
West Washington	97	51	72.7	11.45	
Florida.					
Archer	97	64	79.8	14.60	
Bartow	96	64	80.8	10.30	
Brooksville	96	67	80.4	9.55	
Carrabelle	93	66	79.6	8.88	
Clermont	99	62	82.1	10.62	
Dalkeith	96	66	80.3	17.06	
De Funiak Springs	93	65	78.2	12.04	
Deland	97	62	80.4	.....	
Earnestville	98	67	81.6	14.13	
Eustis	97	65	81.2	8.78	
Fort Meade	94	66	79.6	17.94	
Huntington	95	62	78.3	12.17	
Hypoluxo	90	70	79.9	3.47	
Inverness	92	64	78.6	5.86	
Jasper	94	64	78.8	5.50	
Kissimmee	96	65[c]	80.4	8.18	
Lake Butler	95[a]	62	78.2[c]	8.60	
Lake City	95	60	77.7	6.96	
Macclenny	98	60	79.2	5.32	
Manatee	93	62	78.3	9.23	
Marianna	92	59	77.6	6.52	
Merritt Island	89	72	80.8	6.10	
Middleburg	95	61	77.8	7.49	
Myers	91	66	79.4	7.12	
New Smyrna	91	61	78.3	9.89	
Nocatee[c]	99	66	81.4	5.08	
Ocala	100	63	80.4	14.31	
Orange City	94	.....	.....	12.95	
Orlando	94	66	79.9	7.62	
Plant City	96	64	80.2	10.24	
St. Andrews	92	65	78.9	14.76	

Stations.	Temperature. (Fahrenheit.)			Precipitation.	
	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
Florida—Cont'd.	°	°	°	*Ins.*	*Ins.*
St. Francis	93	58	77.9	11.21	
Sebastian	89	70	79.4	9.29	
Stephensville*[1]	95	68	79.4	8.01	
Sumner	93	63	78.8	12.28	
Switzerland	91	68[c]	77.1	9.04	
Tallahassee	91	67	78.1	16.47	
Tarpon Springs	89	64	77.9	13.47	
Washington	96	65	79.6	5.73	
Georgia.					
Adairsville	88	61	74.6	10.76	
Albany	97	65	80.8	8.24	
Allapaha	92	61	77.6	7.57	
Allentown	95	60	79.0	6.96	
Americus	95	62	78.8	4.37	
Athens *b*	89	61	75.0	11.39	
Bainbridge	95	66	78.8	8.34	
Bellville	.....	.....	.....	7.28	
Camak	92	59	77.5	7.39	
Carlton	.....	.....	.....	13.38	
Cedartown	92	61	75.4	5.85	
Clayton	90	54	72.6	13.51	
Columbus	93	66	79.0	6.35	
Covington	95	60	73.8	14.78	
Dahlonega	87	53	67.4	13.01	
Diamond	88	55	71.6	15.36	
Dublin	.....	.....	.....	9.28	
Eastman	95	61	78.8	4.12	
Elberton	92	60	76.4	10.72	
Experiment	91	60	74.5	12.02	
Fitzgerald	99	58	79.0	3.39	
Fleming	97	59	77.2	7.18	
Fort Gaines	95	63	78.6	8.79	
Franklin	89	57	74.4	13.90	
Gainesville	85	58	71.8	12.09	
Gillsville	92	56[j]	73.6[e]	8.82	
Greenbush	91	61	74.2	11.21	
Griffin	92	60[e]	75.4[d]	15.88	
Harrison	93	59	77.0	7.87	
Hawkinsville	.....	.....	.....	4.59	
Hephzibah	.....	.....	.....	8.60	
Jesup	94	61	78.0	5.60	
Lost Mountain	90	59	73.7	11.91	
Louisville[f]	94	63	78.6	7.50	
Lumpkin	94	64	78.0	2.95	
Marshallville	96	65	78.8	4.38	
Millen	95	62	78.8	4.85	
Morgan	92	62	75.4	4.96	
Naylor	96	60	77.0	10.09	
Newnan	88	61	75.0	13.44	
Oakdale	.....	.....	.....	7.84	
Point Peter	95	58	76.4	12.71	
Poulan	94	59	77.7	4.19	
Putnam	95	61	77.6	6.01	
Quitman	97	60	79.0	9.28	
Ramsey	88	60	72.9	9.94	
Resaca	.....	.....	.....	10.22	
Rome	90	60	75.2	10.60	
Statesboro	97	59	78.8	.....	
Talbotton	94	59	77.6	5.91	
Tallapoosa	92	57	72.3	9.92	
Thomasville	93	65	79.0	11.84	
Union Point	88	61	75.4	11.86	
Valona	96	62	78.6	9.68	
Washington	89	62	75.9	11.46	
Waycross	97	61	78.7	7.05	
Waynesboro	91	56	74.6	5.74	
Westpoint	92	62	77.6	14.05	
Whiteoak	91	62	77.1	6.55	
Idaho.					
Albion	92	30	64.6	0.13	
American Falls	103	36	68.2	0.00	
Atlanta	90	27	58.2	0.87	
Blackfoot	108	35	69.6	0.25	
Challis	97	36	65.0	0.72	
Chesterfield	95	25	59.6	0.74	
Downey	99	29	64.8	T.	
Forney	97	26	61.8	1.00	
Fort Sherman	94	33	62.2	0.08	
Garnet	108	42	74.2	0.00	
Hagerman	108	39	74.4	0.48	
Hailey	109	34	69.5	0.07	
Idaho City	95[d]	32[d]	63.8[d]	0.70	
Kootenai	89	44	65.4	0.75	
Lake	88	30	57.2	0.35	
Lakeview	91	40	64.1	1.92	
Marysville[h]	97	24	60.2	0.24	
Moscow	88	35	63.6	0.29	
Murray	89	33	60.8	3.92	
Oakley	100	36	67.8	0.20	
Ola	100	40	66.8	0.31	
Paris	97	36	62.6	0.30	
Payette	103	39	72.0	0.14	
Pollock	104	40	67.9	0.33	
St. Maries	87	35	63.0	1.04	
Salubria	101	31	67.8	0.13	
Soldier	99	28	62.7	0.04	

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Idaho—Cont'd.	°	°	°	*Ins.*	*Ins.*
Weston	95[e]	37[f]	66.8[e]	0.29	
Illinois.					
Albion	92	53	74.0	7.81	
Alexander	91	48	72.4	3.09	
Ashton	88	44	66.4	1.43	
Astoria	92	47	71.4	1.30	
Aurora *a*	90	43	67.9	2.94	
Beardstown	......	......	......	1.71	
Bloomington	91	47	72.0	2.49	
Bushnell	94	51	73.5	1.53	
Cambridge	89	49	70.2	0.93	
Carlinville	94	48	72.5	4.88	
Carlyle	......	......	......	8.70	
Centralia	93	53	74.2	7.86	
Charleston	91	48	71.8	4.10	
Chemung	90	39	65.7	2.11	
Chester	......	......	......	7.62	
Cisne	90	52	72.2	9.07	
Coatsburg	92	50	71.3	1.45	
Cobden	94	50	73.6	9.52	
Danville	91	47	70.8	1.17	
Decatur	93	47	71.7	4.18	
Dixon	91	46	68.8	1.32	
Dwight	92	44	68.3	2.99	
Effingham	93	50	72.2	9.48	
Elgin	91	43	67.0	2.72	
Equality	92	54	74.4	9.93	
Flora	91	52	72.6	8.28	
Friendgrove *[1]	94	56	76.2	8.42	
Galva	91	46	69.7	0.51	
Glenwood	90[f]	46[f]	64.7[f]	1.93	
Grafton	......	......	......	2.54	
Grayville	92	57	75.4	7.55	
Greenville	92	51	73.2	8.39	
Griggsville	94	49	71.9	2.40	
Halfway	92	55	74.0	8.65	
Halliday	98	46	74.4	7.23	
Havana	......	......	......	3.48	
Henry	90	47	70.1	2.52	
Hillsboro	90	50	71.3	6.10	
Joliet	91	45	68.0	1.80	
Kishwaukee	90	43	66.9	2.58	
Knoxville	91	46	69.1	0.42	
Laharpe	94	47	71.6	0.53	
Lanark	94	42	68.1	1.91	
Loami	......	......	......	3.73	
McLeansboro	90	55	74.2	6.13	
Martinsville	90	53	71.6	5.07	
Martinton	91	44	69.1	2.33	
Mascoutah	94	53	73.0	5.17	
Mattoon	90	52	71.8	5.43	
Minonk	92	45	69.1	1.40	
Monmouth	95	45	70.7	0.82	
Monticello	93	46	69.9	3.82	
Mount Carmel	......	......	......	7.91	
Mount Pulaski	95	48	72.6	3.96	
Mount Vernon	91	53	72.4	8.35	
New Burnside	94	55	74.2	9.08	
Olney	93	51	73.3	6.29	
Ottawa	93	48	71.1	1.96	
Palestine	95	47	74.5	6.77	
Pana	90	49	69.8	6.17	
Paris	92	48	71.4	6.37	
Peoria *a*	......	......	......	1.60	
Peoria *b*	94	51	73.2	1.44	
Philo	91	47	69.9	4.55	
Plumhill	91	53	72.3	5.27	
Rantoul	92	47	70.0	7.31	
Raum	91	58	75.6	10.14	
Riley	90	43	67.4	2.43	
Robinson	91	50	72.4	6.98	
Rockford	91	45	70.0	2.73	
Roundgrove	91	42[e]	67.6	1.61	
Scales Mound	92	42	67.0	1.80	
Shobonier	91	51	73.2	9.03	
Streator	92	44	68.9	1.63	
Sullivan	93[e]	49[e]	71.4[e]	4.67	
Sycamore	88	42	66.6	2.22	
Tilden	90	52	72.2	6.66	
Tiskilwa	91	46	69.8	5.12	
Tuscola	93	47	70.9	9.23	
Walnut	93	46	70.4	3.03	
Wheaton *[5]	88	50	70.4	2.84	
Winchester	93	51	72.4	4.2[illegible]	
Winnebago	89	42	66.8	2.67	
Yorkville	89	42	65.2	2.14	
Zion	92	45	69.1	1.15	
Indiana.					
Anderson	88	47	70.2	4.15	
Angola	86	45	67.2	4.60	
Auburn	95	44	69.8	5.61	
Bedford	96	55	73.4	5.02	
Bloomington	91	50	72.4	5.73	
Bluffton	90	46	69.4	5.01	
Boonville	95	52	72.6	6.50	
Butlerville	91	50	72.3	3.28	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Indiana—Cont'd.	°	°	°	*Ins.*	*Ins.*
Cambridge City	88	45	69.9	6.54	
Columbus	92	48	72.3	3.10	
Connersville	91	48	71.1	2.74	
Crawfordsville	93	45	72.4	4.79	
Delphi	93	45	70.2	7.28	
Edwardsville *[1]	89	55	75.0	3.57	
Fairmount	92	44	70.6	4.96	
Farmland	86	45	68.4	5.03	
Fort Wayne	90	46	69.5	6.05	
Franklin *[1]	90	56	72.1	4.38	
Greencastle	88	48	70.7	8.48	
Greensburg	90	48	70.6	4.19	
Hammond	88	49	65.3	2.25	
Hector	89	45	69.6	4.82	
Huntington	89	47	69.0	7.91	
Jeffersonville	93	55	74.6	3.28	
Knightstown	91	48	71.0	3.76	
Kokomo	87	48	69.0	8.45	
Lafayette	89	47	69.8	7.88	
Laporte	99	45	70.0	1.82	
Logansport	90	42	71.2	3.34	
Madison *a*	93	52	74.6	3.54	
Madison *b*	......	......	......	3.06	
Marengo	92	50	72.8	6.25	
Marion	89	46	70.2	8.20	
Markle	86	46	68.4	9.10	
Mauzy	89	46	70.2	3.95	
Mount Vernon	93	45	72.7	7.49	
Northfield	89	46	69.8	3.38	
Paoli	91	50	72.0	9.33	
Prairie Creek	94	48	73.8	7.10	
Princeton	95	52	74.2	8.38	
Rensselaer	92	46	69.0	4.40	
Richmond	87	46	68.8	5.64	
Rockport	89	58	73.6	......	
Rockville	89	47	70.0	6.96	
Salem	93	48	73.3	6.24	
Scottsburg	92	51	74.1	3.80	
Seymour	91	52	72.8	3.46	
Shelbyville	92	51	72.7	3.72	
South Bend	91	43	69.0	2.66	
Syracuse	90	44	68.6	3.70	
Terre Haute	93	49	71.8	7.92	
Topeka	84	45	66.3	3.06	
Valparaiso	88	46	70.6	3.00	
Veedersburg	93	46	71.7	9.06	
Vevay	90	53	74.2	2.75	
Vincennes	94	53	74.4	14.31	
Washington	96	53	73.8	7.74	
Winamac	89	43	69.0	3.75	
Worthington	92	52	72.6	9.14	
Indian Territory.					
Claremore	97	61	77.2	3.65	
Fairland	99	58	75.8	4.41	
Hartshorne	99	58	80.3	4.32	
Healdton	105	55	80.3	T.	
Lehigh	103	59	80.6[f]	1.51	
Muscogee	97	53	75.4	5.35	
Pauls Valley	101	52	78.7	T.	
Ryan	104	62	81.4	0.57	
South McAlester	......	......	......	2.41	
Tahlequah	95	59	76.4	7.05	
Tulsa	......	......	......	1.97	
Wagoner	100	58	78.6	3.58	
Webbers Falls	98	64	80.2	4.22	
Iowa.					
Afton	98	47	70.9	2.02	
Albia	93	47	69.5	2.52	
Algona *[1]	94	49	70.2	4.87	
Alta *a*	94	41	68.0	6.23	
Amana	92	48	69.5	3.75	
Ames *b*	96	47	69.4	6.48	
Ames (near)	......	......	......	8.15	
Atlantic	99	40	69.1	2.09	
Audubon	97	41	68.2	2.24	
Bancroft	94	44	67.1	5.28	
Batavia	......	......	......	3.40	
Baxter	94	47	69.4	4.13	
Bedford	99[e]	45[e]	72.8[e]	2.10	
Belknap	89	50	69.4	3.15	
Belleplaine	92	48	70.6	7.30	
Bonaparte	91	51	70.0	2.73	
Britt	94	44	67.6	5.25	
Buckingham	......	......	......	6.04	
Bussey	......	......	......	3.79	
Carroll	96	45	68.6	3.88	
Carson	......	......	......	1.57	
Cedar Rapids	94	51	71.0	4.22	
Centerville	91	50	70.8	3.43	
Chariton	92	46	69.2	2.63	
Charles City	94	40	67.8	5.53	
Clarinda	98	46	71.8	3.15	
Clearlake	97	45	68.8	6.60	
Clinton	94	45	70.0	1.70	
College Springs	97	48	71.9	2.34	
Coon Rapids	95	48	69.2	4.5	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Iowa—Cont'd.	°	°	°	*Ins.*	*Ins.*
Corning	95	43	70.0	1.23	
Council Bluffs	98	50	73.1	2.32	
Crawfordsville	......	......	......	2.74	
Cresco	93	47	67.0	3.84	
Cumberland	......	......	......	1.89	
Danville	......	......	......	1.78	
Decorah	94	40	68.0	2.76	
Delaware	93	42	67.4	2.70	
Denison	95	46	69.1	2.45	
Desoto	96	49	70.4	4.79	
Dows	93	44	66.8	4.57	
Eldon	93	48	71.6	5.98	
Elkader	98	45	•69.6	2.53	
Emerson	......	......	......	3.70	
Emmetsburg	......	......	......	6.73	
Estherville	94	41	66.6	3.96	
Fairfield	90	49	69.9	3.03	
Fayette	95	41	67.6	3.14	
Fonda	94	43	68.3	11.90	
Forest City	94	47	67.3	4.39	
Fort Dodge	92	44	68.3	5.34	
Fort Madison	......	......	......	2.88	
Galva	97	43	68.2	2.88	
Gilman	......	......	......	7.35	
Glenwood	94	46	70.6	4.48	
Greene	99	46	69.5	5.49	
Greenfield	97	47	72.2	3.56	
Grinnell	88	49	69.2	7.80	
Grundy Center	90	47	67.9	11.44	
Guthrie Center	95	41	68.5	4.26	
Hamburg	......	......	......	3.81	
Hampton	96	49	69.3	5.72	
Harlan	95	44	69.6	1.89	
Hawkeye	......	......	......	3.81	
Hedrick	92	48	70.5	6.21	
Hoprig	......	......	......	6.40	
Humboldt	95	45	68.8	4.71	
Independence	91	46	68.0	3.83	
Indianola	93	46	70.4	3.93	
Iowa City	95	47	70.4	2.18	
Iowa Falls	94	45	68.9	5.92	
Keosauqua	92	52	72.1	3.30	
Knoxville	95	49	71.0	6.24	
Lacona	......	......	......	4.55	
Lansing	97	42	69.2	2.03	
Larchwood	96	39	69.4	2.83	
Larrabee	98	38	68.0	6.93	
Leclaire	......	......	......	0.67	
Lemars	96	43	69.4	3.42	
Lenox	90	48	69.9	2.42	
Logan	100	43	70.6	1.27	
Maple Valley	......	......	......	5.20	
Maquoketa	89	46	67.6	2.20	
Marshalltown	93	47	69.8	7.79	
Mason City[e]	91	43	65.8	12.35	
Monticello	94	39	67.0	1.26	
Mooar	90	48	71.6	1.21	
Mountayr	94	49	71.1	1.85	
Mount Pleasant	92	45	68.6	3.19	
Mount Vernon *b*	95	43	69.7	3.09	
Murray	......	......	......	2.65	
New Hampton	91	47	65.4	4.47	
Newton	92	49	69.4	6.35	
Northwood	91	47	68.2	4.88	
Odebolt	102	43	71.6	3.20	
Ogden	95	44	68.9	6.30	
Onawa	95	46	71.0	2.97	
Osage	92	42	66.2	4.13	
Osceola	92	48	69.6	4.62	
Oskaloosa	91	44	69.4	3.63	
Ottumwa	90	56	73.4	3.66	
Ovid	90	47	69.6	4.64	
Pacific Junction	93	46	70.1	4.95	
Pella	96[e]	54[e]	74.5[e]	3.83	
Plover	96	42	69.4	4.67	
Primghar	98	42	69.5	2.40	
Redoak	97	48	72.9	3.82	
Ridgeway	92	40	70.0	4.14	
Rockwell City	94	44	68.6	8.36	
Ruthven	95	45	67.8	6.67	
Sac City	94	44	68.0	6.49	
Scranton	98	47	70.0	4.59	
Sheldon	94	41	67.7	3.63	
Sibley	96	40	67.8	2.99	
Sigourney	98	47	71.5	2.68	
Sioux Center	100	44	70.8	4.42	
Stuart	96	48	69.8	3.60	
Thurman	96	45	72.2	10.55	
Toledo	96	40	69.2	6.74	
Villisca	98	45	72.4	3.32	
Vinton *[1]	92	57	70.0	3.87	
Wapello	97	51	71.9	0.84	
Washington	92	48	69.2	1.52	
Washta	......	......	......	3.20	
Waterloo	92	47	69.0	5.47	
Waverly	91	50	69.4	5.48	

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Iowa—Cont'd.	°	°	°	*Ins.*	*Ins.*
Webster City	......	......	......	4.05	
Westbend *[1]	96	52	69.0	2.59	
Westbranch	94	44	70.4	2.97	
West Union	......	......	......	3.51	
Whitten	93	46	67.8	......	
Wilton Junction	92	45	69.0	1.68	
Winterset	93	47	70.0	5.33	
Woodburn	......	......	......	3.13	
Kansas.					
Achilles	104[d]	43[d]	75.1[d]	1.33	
Altoona	102	57	76.6	6.15	
Anthony	......	......	......	1.22	
Atchison *a*	98	53	74.0	4.86	
Baker	98	50	72.8	4.75	
Beloit	107	51	77.4	0.92	
Burlington	103	50	74.1	7.05	
Campbell	101	53	75.1	1.21	
Colby	102	48	72.8	3.15	
Columbus	99	58	74.8	8.21	
Coolidge	107	48	72.8	3.88	
Cunningham	102	54	74.8	1.75	
Delphos	108	50	75.3	0.55	
Dresden	102	50	73.6	2.14	
Englewood	107	54	76.1	2.58	
Eureka	......	......	......	2.32	
Eureka Ranch	104	53	74.9	4.70	
Fanning	96	46	72.3	4.67	
Fort Scott	99	55	75.0	5.67	
Frankfort	101	48	73.8	3.15	
Garden City	107	54	76.4	2.79	
Grenola	102	56	75.6	4.41	
Hays	107	51	73.8	3.37	
Horton	98	52	73.2	6.81	
Hoxie	106	53	75.3	1.26	
Hutchinson	105	53	74.6	3.46	
Independence	99	59	77.2	5.25	
Lakin	103	51	74.4	2.20	
Lawrence	96	54	73.4	6.03	
Lebanon	......	......	......	2.05	
Lebo	104	52	74.8	5.84	
Little River	104	54	74.2	5.44	
Macksville	101	52	73.4	3.65	
McPherson	106	54	74.0	6.20	
Madison	103	49	74.4	2.74	
Manhattan *b*	106	53	76.0	1.19	
Manhattan *c*	107	50	76.2	0.96	
Marion	108	54	77.0	2.35	
Meade	......	......	......	3.42	
Medicine Lodge	104	56	76.7	2.56	
Minneapolis	108	48	74.3	1.98	
Moran	97	54	73.2	4.30	
Mounthope *[1]	103	61	76.6	3.09	
Ness City	97	57	74.6	5.20	
Newton	106	53	76.1	6.19	
Norwich	104	55[e]	75.5[e]	0.98	
Oberlin	......	......	......	1.73	
Olathe	99	53	74.5	5.18	
Oswego	103	58	78.0	8.76	
Ottawa	99	50	73.1	10.30	
Phillipsburg	104	52	75.0	4.30	
Pratt	105	52	75.2	1.46	
Rome	105	52	76.4	1.54	
Russell	110	50	76.6	3.86	
Salina	106	52	74.7	2.72	
Scott	108	43	73.4	2.49	
Sedan	99	57	74.8	4.92	
Seneca	98	47	73.3	4.17	
Toronto	103	54	75.2	3.16	
Tribune	102	51	72.9	1.39	
Ulysses	110[e]	53[e]	76.4[e]	5.33	
Valley Falls	99	53	73.3	3.59	
Viroqua	109	51	75.5	1.46	
Wakeeney (near)	......	......	......	7.55	
Wallace	......	......	......	3.92	
Wamego *[1]	103	59	75.3	1.95	
Winfield	104	55	77.7	3.52	
Winona	......	......	......	6.50	
Kentucky.					
Alpha *[3]	......	63	73.2	8.82	
Bardstown	93	56	75.0	4.88	
Blandville	91	59	74.9	9.28	
Bowling Green	95	60	74.8	5.67	
Burnside	......	......	......	6.65	
Canton *[1]	90	60	73.7	11.83	
Carrollton	92	56	76.0	2.58	
Catlettsburg	93	50	72.6	4.55	
Earlington	98	54	75.4	8.76	
Edmonton	93	52	73.6	7.14	
Eubank	89	53	72.0	4.06	
Falmouth	......	......	......	2.25	
Fords Ferry	100	53	76.2	9.26	
Frankfort	93	56	74.6	1.85	
Greensburg	92	54	73.9	9.94	
Henderson	92	56	74.9	11.01	
Hopkinsville	90	58	73.3	13.31	
Irvington	90	56	73.3	5.17	
Kentucky—Cont'd.	°	°	°	*Ins.*	*Ins.*
Jackstown	92	50	73.6	2.75	
Leitchfield	89	57	72.8	3.79	
Loretto	98[e]	51	71.8	5.11	
Marrowbone	92	55	74.4	5.41	
Maysville	94	49	74.7	2.20	
Middlesboro	90	54	73.4	5.20[a]	
Mount Hermon	89	56	72.1	8.89	
Mount Sterling	91	55	74.4	2.87	
Owensboro	91	58	74.0	7.85	
Owenton	88[e]	51[e]	71.8[e]	2.75	
Paducah *a*	......	......	......	9.39	
Paducah *b*	98	61	76.8	8.99	
Pikeville	98	52	75.6	4.58	
Princeton	93	57	74.4	11.46	
Richmond	90	54	73.6	3.37	
St. John	88	56	72.3	4.46	
Scott	91	50	72.2	2.94	
Shelby City	91	54	73.2	4.56	
Shelbyville	94	53	75.7	3.66	
Vanceburg	93	40	71.6	2.45	
Warfield	92	54	73.7	2.69	
Williamsburg	95	59	76.4	8.20	
Louisiana.					
Abbeville	92	70	79.4	8.97	
Alexandria	100	65	80.5	10.42	
Amite	95	67	79.8	8.00	
Baton Rouge	95	67	80.2	7.54	
Burnside	93	67	79.5	9.71	
Calhoun	96	64	78.2	8.03	
Cheneyville	96	67	80.0	10.93	
Clinton	93	65	78.2	7.73	
Como	98	64	75.0	6.11	
Covington	97	68	80.0	14.18	
Donaldsonville	93	66	77.9	9.43	
Farmerville[d]	96	62	82.4	......	
Franklin	96	70	80.8	8.10	
Grand Coteau	96	67	79.9	4.50	
Hammond	96	67	80.0	9.27	
Houma	93	70	80.2	11.16	
Jeanerette	97	64	80.3	12.90	
Jennings	95	66	79.4	11.20	
Lafayette	96	67	80.0	8.59	
Lake Charles	95	66	80.4	10.10	
Lake Providence	95	61	78.2	12.99	
L'Argent	92	66	77.7	6.27	
Lawrence	98	69	81.2	7.02	
Libertyhill	101	63	80.4	8.39	
Mansfield	97	63	79.0	4.30	
Melville	95	62	78.3	6.72	
Minden	100	60	79.8	4.53	
Monroe	96	68	79.0	4.58	
Montgomery	92	67	78.2	6.10	
New Iberia	94	69	79.6	9.90	
Oakridge	97	63	78.4	8.78	
Opelousas	96	65	79.7	5.89	
Oxford	97	61[i]	79.0[e]	6.23	
Paincourtville	97	68	81.2	10.14	
Plain Dealing	98	62	78.6	3.81	
Prevost	97	68	80.9	12.48	
Rayne	99	67	81.6	9.21	
Robeline	95	......	......	8.55	
Ruston	96	64	78.0	6.67	
Schriever	98	67	80.6	17.61	
Shellbeach	92	68	80.4	9.09	
Southern University	99	60	77.8	7.71	
Sugar Ex. Station	93	68	80.3	7.74	
Sugartown	94	67	79.4	13.27	
Venice	92	68	79.8	8.61	
Wallace	95	69	80.2	4.81	
White Sulphur Springs	......	......	......	6.93	
Maine.					
Bar Harbor	87	......	......	3.52	
Belfast *[6]	84	57	65.7	4.34	
Calais	89	39	62.8	4.30	
Carmel	86	37	62.6	3.62	
Cornish *[1]	90	47	67.8	2.45	
Fairfield	84	41	63.0	4.08	
Farmington	89	37	64.6	5.51	
Flagstaff	84	35	59.7	3.43	
Gardiner	95	47	66.5	1.34	
Kineo	85	47	65.3	3.24	
Lewiston	95	42	67.4	1.69	
Mayfield	86	40	62.6	3.31	
North Bridgton	96	38	66.6	1.64	
Orono	86	38	63.4	3.83	
Rumford Falls	88	42	64.9	3.35	
Winslow	88	40	65.5	4.09	
Maryland.					
Annapolis	95	55	74.0	6.41	
Bachmans Valley	91	46	70.0	6.29	
Boettcherville	99	47	72.8	3.36	
Boonsboro *a*	95	47	72.0	2.71	
Charlotte Hall[f]	95	50	72.0	5.18	
Chase	96	47	68.8	4.18	
Chestertown	91	53	71.4	5.90	
Chewsville	92	48	71.3	4.52	
Maryland—Cont'd.	°	°	°	*Ins.*	*Ins.*
Coleman	91	......	......	4.65	
Collegepark	97	52	74.2	7.15	
Cumberland *a*	91	59	76.4	4.05	
Cumberland *b*	......	......	......	3.98	
Darlington	92	51	71.9	4.59	
Deerpark	87[d]	39[d]	64.0[d]	4.62	
Easton	91	49	72.6	4.29	
Ellicott City	90	42	67.8	4.79	
Fallston	91	49	71.0	4.52	
Frederick	94	50	73.0	3.39	
Frostburg	90	43	67.8	4.55	
Grantsville	88	41	65.4	4.09	
Greatfalls	94	52	72.8	2.79	
Greenspring Furnace	95	51	72.5	3.08	
Hagerstown	96	50	73.3	4.32	
Hancock	100	48	73.2	4.18	
Harney	......	......	......	4.55	
Jewell	92	53	72.3	5.47	
Johns Hopkins Hospital	93	50	71.8	4.34	
Laurel	93	49	71.6	8.28	
McDonogh	90	51	70.7	5.04	
Mount St. Marys Coll	92	48	69.4	3.81	
Newmarket	92	50	71.6	4.10	
Pocomoke	93	50	74.2	2.81	
Princess Anne	92	45	71.6	4.08	
Prince Fredericktown	93	50	73.0	5.12	
Queenstown	91	48	72.3	4.66	
Rockhall *b*	92	47	72.1	4.66	
Sharpsburg	92	43	71.7	2.94	
Smithsburg *a*	93	45	70.9	3.46	
Smithsburg *b*	94	51	71.6	4.57	
Solomons	91	55	75.0	3.31	
Sudlersville	90	51	70.4	1.48	
Sunnyside	89	36	64.7	6.81	
Takoma Park	91	50	71.0	7.26	
Taneytown[f]	95	49	73.4	2.36	
Van Bibber	91	51	71.4	3.80	
Westernport	91	43	68.0	4.71	
Westminster	93[i]	42[i]	70.6[i]	3.39	
Woodstock	93	51	72.6	3.89	
Massachusetts.					
Amherst	91	35	66.0	3.39	
Attleboro	......	......	......	3.16	
Bedford	89	39	66.6	2.12	
Bluehill (summit)	90	43	66.0	4.23	
Cambridge	95	41	68.6	2.47	
Chestnuthill	96	38	68.3	2.90	
Cohasset	......	......	......	3.20	
Concord	93	36	66.0	2.49	
East Templeton *[1]	88	48	66.6	2.83	
Fallriver	87	43	67.0	1.47	
Fiskdale	......	......	......	4.22	
Fitchburg *a* *[1]	89	48	68.0	2.84	
Fitchburg *b*	91	40	68.0	2.38	
Framingham	93	37	69.2	2.91	
Groton	90	37	66.0	3.99	
Hyannis *[1]	87	49	63.2	1.12	
Jefferson	......	......	......	3.98	
Lawrence	92	39	68.0	2.52	
Leeds	91	39	66.8	2.27	
Leominster	......	......	......	2.85	
Longplain	......	......	......	0.84	
Lowell *a*	90	40	68.7	2.71	
Lowell *b*	92	39	67.5	......	
Ludlow Center	88	36	62.6	4.50	
Middleboro	89	39	64.8	1.99	
Monson	90	40	66.2	5.18	
New Bedford *a*	87	43	64.8	1.12	
Pittsfield	87	44	66.6	3.62	
Plymouth *[1]	90[d]	52[d]	66.4[d]	2.27	
Princeton	......	......	......	3.28	
Salem	......	......	......	1.67	
Somerset *[1]	94	48	69.5	1.92	
South Clinton	......	......	......	3.25	
Springfield Armory	93	42	68.4	2.84	
Sterling	......	......	......	3.84	
Taunton *c*	89	38	65.0	2.67	
Webster	......	......	......	4.91	
Westboro	93	40	68.6	3.50	
Weston	91	38	66.8	2.67	
Williamstown *[1]	84	55	66.6	4.94	
Winchendon	......	......	......	3.26	
Worcester *b*	90	40	66.8	3.98	
Michigan.					
Adrian	89	47	67.2	3.15	
Agricultural College	89	41	65.2	2.57	
Allegan	......	......	......	2.22	
Alma	93	38	65.1	1.25	
Ann Arbor	90	45	66.4	2.30	
Arbela	89	40	65.2	3.48	
Badaxe	94	43	65.5	3.20	
Baldwin	94	34	64.4	4.03	
Ball Mountain	87	42	65.0	3.37	
Battlecreek	91	42	67.2	4.12	
Bay City	92	40	65.0	1.43	
Berlin	88	40	62.6	4.01	

TABLE II.—*Climatological record of voluntary and other cooperating observers.*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
	°	°	°	*Ins.*	*Ins.*
***Michigan*—Cont'd.**					
Berrien Springs	93	41	66.9	1.42	
Big Point Sable*[10]	78	44	59.0	......	
Big Rapids	92	36	63.7	2.30	
Boon	87	35	60.4	3.61	
Calumet	84	32	59.4	3.54	
Charlevoix	89	39	61.2	3.20	
Cheboygan	89	35	61.0	4.08	
Clinton	94	45	68.0	2.56	
Coldwater	89	42	66.8	4.76	
Dundee	87	45	66.4	3.20	
Eagle Harbor	84	35	57.2	2.92	
East Tawas	89	40	62.8	2.15	
Eloise	90	46	67.0	2.90	
Ewen	......	......	......	1.70	
Fairview	87	45	67.2	2.49	
Fitchburg	88	39	64.9	3.24	
Flint	88	39	64.5	4.72	
Frankfort	78	40	60.5	1.51	
Gaylord	......	......	......	4.02	
Gladwin	93	38	64.6	1.95	
Grand Rapids	94	44	68.0	2.38	
Grape	89	44	67.2	3.42	
Grayling	90	35	63.8	3.54	
Hanover	89	41	66.0	2.52	
Harbor Beach	92	42	62.1	2.22	
Harrison	91	34	63.4	1.74	
Harrisville	96	37	61.2	0.53	
Hart	90	38	64.2	1.46	
Hastings	92	39	65.8	2.69	
Hayes	90	38	63.2	1.58	
Highland Station	......	......	......	2.70	
Hillsdale	87	41	65.9	4.49	
Holland*[10]	80	49	64.3	......	
Howell	......	......	......	2.24	
Humboldt	91	24	58.4	2.29	
Ionia	92	38	65.8	2.65	
Iron River	90	28	58.6	2.88	
Ishpeming	91	30	59.8	2.43	
Isle Royal	70	22	46.8	2.14	
Ivan	89	32	62.0	3.21	
Jackson	93	45	68.7	2.19	
Jeddo	91	40	62.6	2.55	
Kalamazoo	92	37	66.8	3.09	
Lake City	90	37	63.0	4.65	
Lansing	88	43	65.9	2.19	
Lapeer	90	42	66.8	2.69	
Lathrop	92	28	58.8	1.82	
Lincoln	90	38	63.1	0.49	
Ludington	83	42	61.0	1.55	
Mackinac Island	79	38	60.0	3.15	
Mackinaw	89	36	59.2	4.41	
Madison	90	47	68.4	2.73	
Mancelona	93	33	63.5	3.76	
Manistee	......	......	......	1.75	
Manistique	84[c]	35[c]	57.8[c]	3.88	
Menominee	......	41	......	1.75	
Middle Island*[10]	89	47	60.2	......	
Midland	88	45	66.4	1.60	
Mottville	87	42	65.8	3.04	
Mount Clemens	93	41	66.7	3.11	
Mount Pleasant	90	29	63.6	1.63	
Muskegon	86	42	65.6	2.49	
Newberry	85	30	57.6	2.50	
North Marshall	89	40	64.4	3.50	
Northport	89[e]	39[e]	61.8[e]	3.21	
Old Mission	94	38	63.0	2.73	
Olivet	88	43	66.2	3.18	
Omer	......	......	......	1.60	
Ontonagon	89	37	59.8	1.92	
Ovid	90	40	65.8	2.49	
Owosso	91	40	66.4	2.12	
Petoskey	90[j]	36[j]	61.4[j]	5.10	
Plymouth	......	......	......	1.69	
Port Austin	91	38	62.6	1.67	
Reed City	92	46	65.8	4.23	
Romeo	88	44	65.8	7.73	
Saginaw	93	41	66.3	2.57	
St. Ignace	86	32	57.2	3.72	
St. Johns	90	42	66.2	2.26	
St. Joseph	88	41	65.6	1.25	
Sidnaw	94	27	60.7	......	
Somerset	88[c]	41[c]	65.5[c]	2.46	
South Haven	88	48	66.2	1.79	
Stanton	93	40	66.1	......	
Thornville	88	41	66.1	4.57	
Traverse City[f]	85	45	61.7	1.38	
Vandalia	89	43	67.6	2.00	
Vassar	90	38	66.2	2.29	
Wasepi	87	43	66.0	3.58	
West Branch	93	33	62.6	2.41	
Wetmore	91	26	57.6	2.00	
Whitecloud	94	37	65.8	2.10	
Whitefish Point	87	35	53.5	3.51	
Williamston	90	39	63.7	1.98	
Ypsilanti	88	45	65.2	3.05	
Minnesota.					
Ada	96	33	65.4	0.76	
Albert Lea	94	46	68.2	1.82	
Alexandria	93	36	66.1	0.49	
Ashby	91[b]	36[b]	65.6[b]	1.16	
Beardsley	94	30	65.0	1.15	
Bemidji	94	32	65.8	1.08	
Bird Island	96	38	68.0	1.84	
Blooming Prairie	98	43	67.8	1.95	
Caledonia	94	46	66.4	4.36	
Campbell	93	28	63.6	1.64	
Collegeville	92	42	68.0	0.52	
Crookston	99	35	66.4	1.07	
Deephaven	......	......	......	0.65	
Detroit City	94	30	64.3	1.35	
Faribault	97	41	68.4	1.34	
Farmington	97	41	67.4	0.86	
Fergus Falls	94	36	66.4	1.54	
Grand Marais	......	......	......	2.39	
Grand Meadow	96	43	68.8	1.24	
Granite Falls	95	37	67.2	1.10	
Hallock	102	31	66.0	1.87	
Lake Jennie	93	37	68.0	1.11	
Lakeside	94	38	68.2	1.23	
Lake Winnibigoshish	92	38	64.2	1.53	
Leech[c]	94	......	......	0.50	
Leroy	......	46	......	4.61	
Long Prairie	95	33	65.6	0.92	
Luverne	91	42	69.4	2.25	
Lynd	94	34	65.4	1.48	
Mapleplain	97	39	69.2	0.70	
Milaca	93	35	65.2	7.52	
Milan	94	34	67.6	1.73	
Minneapolis *a*	98	43	69.4	2.41	
Minneapolis *b*[1]	96[e]	41	69.4	2.60	
Minnesota City*[1]	98	50	72.0	2.20	
Montevideo	98	34	66.9	2.54	
Morris	98	37	68.4	0.32	
Mount Iron	95	33	63.2	0.60	
Newfolden	96	30	64.3	1.94	
New London	96	38	66.5	0.34	
New Richland*[1]	96	52	68.6	......	
New Ulm	95	43	70.4	2.78	
Park Rapids	94	32	64.6	0.79	
Pine River	94	39	65.1	1.17	
Pipestone	90	38	68.4	2.08	
Pleasant Mounds	90	42	66.4	2.44	
Pokegama Falls	95	28	62.2	0.58	
Redwing	......	......	......	1.57	
Reeds	......	......	......	1.93	
Rolling Green	92	42	65.8	4.44	
St. Charles	95	43	67.2	1.74	
St. Cloud	95	41	69.2	2.05	
St. Peter	92	41	68.8	1.05	
Sandy Lake Dam	93	35	63.9	0.54	
Shakopee	96	42	69.8	0.50	
Thief River Falls	......	......	......	1.06	
Tower	96	......	......	2.50	
Two Harbors	86	42	59.5	1.27	
Wabasha*[1]	100	50	69.5	1.86	
Willmar	92	38	66.6	0.43	
Willow River	98	32	65.0	0.87	
Winnebago City	95	44	68.4	1.94	
Worthington	91	40	66.8	2.29	
Zumbrota*[1]	95[e]	41	68.9	......	
Mississippi.					
Aberdeen	94	65	76.4	12.53	
Agricultural College	96	65	78.6	14.39	
Americus	93	59	78.2	23.30	
Austin	92	64	76.0	14.72	
Batesville	94	63	75.8	10.85	
Bay St. Louis	95	67	79.4	20.21	
Biloxi	94	67	80.2	16.93	
Booneville	90	63	74.8	12.27	
Brookhaven	99	61	76.4	7.58	
Canton	93	66	77.8	11.08	
Columbus *a*	......	......	......	16.06	
Columbus *b*	92	61	76.9	16.59	
Corinth	91	60	73.5	8.40	
Crystalsprings	93	65	78.7	7.41	
Edwards	95	67	79.8	12.31	
Fayette	92	66	77.1	12.25	
Fayette (near)*[1]	96	72	80.2	......	
Greenville *a*	94	67	78.8	9.51	
Greenville *b*	98	66	78.0	9.29	
Hattiesburg	95	68	78.8	18.48	
Hazlehurst	96	62	78.8	7.19	
Hernando	91	64	76.1	10.91	
Holly Springs	94	63	75.0	14.04	
Jackson	97	58	74.8	9.35	
Kosciusko	93	66	77.9	10.10	
Lake	98	63	76.0	16.62	
Leakesville	96	64	78.2	15.58	
Logtown	96	68	79.7	15.85	
Louisville	92	47	75.5	14.05	
Macon	94	62	77.5	13.92	
Magnolia	96	69	80.8	6.55	
***Mississippi*—Cont'd.**					
Natchez	96	67	79.4	5.50	
Okolona	......	......	......	12.84	
Palo Alto	92	65	77.0	15.28	
Pontotoc	90	56	74.6	13.51	
Port Gibson	97	66	78.2	12.01	
Ripley	90	61	74.8	9.54	
Shoccoe	89	64	77.6	6.23	
Stonington*[1]	90	68	77.0	......	
Thornton	......	......	......	11.65	
Tupelo	......	......	......	15.51	
Walnutgrove	89[c]	67[c]	77.2[c]	10.70	
Watervalley	......	......	......	11.88	
Waynesboro	92	63	77.0	17.28	
Woodville	96	67	79.1	8.68	
Yazoo City	98[f]	65[f]	77.5[f]	12.11	
Missouri.					
Appleton City	100	55	74.4	3.28	
Arlington	......	......	......	5.40	
Arthur*[3]	......	62	74.4	7.79	
Avalon	94	50	72.0	2.84	
Bagnell	......	......	......	7.18	
Bethany	94	44	71.0	1.12	
Birchtree	91	59	73.2	4.96	
Boonville	......	......	......	7.61	
Brunswick	91	54	72.0	2.78	
Carrollton	98	54	73.8	2.95	
Conception	93	50	72.3	3.54	
Cook Station	95	50	72.5	6.05	
Cowgill*[5]	92	56	75.0	2.95	
Darksville	89	53	71.2	3.47	
Downing	......	......	......	5.56	
East Lynne*[8]	......	51	69.8	5.77	
Edgehill*[5]	94	58	74.8	7.46	
Edwards	98	50	74.2	4.58	
Eldon	92	47	72.6	5.26	
Elmira	94	46	72.2	......	
Fairport	......	......	......	2.59	
Fayette	92	55	73.6	3.64	
Fulton	90	48	72.1	6.18	
Galena	......	......	......	4.09	
Gallatin*[1]	94	52	73.9	2.17	
Gayoso	100	60	78.9	9.07	
Glasgow	92	53	72.8	2.40	
Gorin	......	......	......	4.96	
Halfway	95	54	73.2	5.75	
Harrisonville	94	52	72.8	5.52	
Hazlehurst	......	......	......	2.92	
Hermann	......	......	......	5.34	
Houston	93	54	72.1	5.79	
Houstonia (near)	......	......	......	4.81	
Irena	......	......	......	3.10	
Ironton	93	53	72.5	6.99	
Jackson*[3]	91	60	72.2	6.79	
Jefferson City	99	45	75.5	6.05	
Kidder	93	51	72.0	2.93	
Lamar	100	57	75.6	4.31	
Lamonte	......	......	......	4.56	
Lebanon	93	56	73.8	6.23	
Lexington	95	53	74.2	4.62	
Liberty	95	48	71.9	3.20	
Louisiana	95	50	73.8	2.56	
McCune*[1]	61	57	71.7	3.23	
Macon	91	52	72.5	6.45	
Marblehill	92	51	73.7	7.65	
Marshall	92	51	71.6	4.41	
Maryville	99	50	71.9	3.07	
Mexico	94	51	73.2	5.42	
Miami*[5]	92	60	76.2	2.96	
Mineralspring	94	52	70.7	2.36	
Montreal	91	49	72.0	7.56	
Mount Vernon	96	58	73.6	5.16	
Neosho	95	52	72.9	6.04	
Nevada	......	......	......	5.42	
New Haven	95	55	74.6	6.24	
New Madrid	91	63	76.3	8.76	
New Palestine	92	51	72.0	5.11	
Oakfield	92	53	73.2	4.33	
Olden	90	50	69.6	3.83	
Oregon *a*	94	53	73.6	3.68	
Oregon *b*	97	55	74.6	3.57	
Palmyra*[5]	90	54	73.9	2.72	
Phillipsburg*[1]	95	62	72.6	3.82	
Pickering*[3]	......	46	67.0	4.67	
Pine Hill	......	......	......	3.97	
Poplarbluff	95	58	76.6	8.27	
Potosi	94	46	70.8	7.66	
Princeton	97	50	73.8	1.80	
Richmond	94	54	72.4	8.67	
Rockport	......	......	......	4.10	
Rolla	......	......	......	5.67	
St. Charles	92	49	73.4	5.91	
St. Joseph	......	......	......	4.09	
Sarcoxie*[8]	103	62	73.7	2.84	
Sedalia	98[d]	51[d]	74.0[d]	3.31	
Seymour	92	55	71.8	3.54	
Shelbina	......	......	......	5.40	

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Missouri—Cont'd.	°	°	°	*Ins.*	*Ins.*
Sikeston	93	57	74.6	6.66	
Steffenville	89	51	71.2	4.53	
Sublett	96	50	71.8	5.08	
Trenton	92	53	72.5	2.87	
Unionville	99	50	74.0	3.56	
Vichy	91	54	71.7	6.97	
Warrensburg	94	51	73.5	5.52	
Warrenton	94	52	72.8	6.47	
Wheatland	.....	.....	.....	3.78	
Willowsprings	99	50	74.6	7.86	
Windsor	92	54	73.3	4.08	
Wylie	98	55	74.8	7.27	
Zeitonia	95	56	75.6	5.08	
Montana.					
Adel	97	25	58.2	0.51	
Boulder *	96	32	63.7	0.19	
Bozeman	95	34	63.8	0.39	
Butte	94	38	63.8	0.66	
Canyon Ferry	103	40	70.0	0.10	
Chinook	109	38	69.2	0.35	
Columbia Falls	92	34	60.8	2.93	
Corvallis	96	36	64.3	1.45	
Crow Agency	101	40	70.0	0.00	
Dearborn Canyon	97	31	61.3	1.50	
Dell	96	31	62.8	0.15	
Dillon	94	35	64.6	0.73	
Dupuyer	104	33	65.0	5.01	
Ekalaka	100	35	71.0	0.60	
Fort Benton	108	48	70.0	0.62	
Fort Logan	97	30	60.3	0.67	
Glasgow	109	40	70.3	0.15	
Glendive	107	40	72.5	0.95	
Glenwood	101	31	63.3	0.23	
Greatfalls	102	40	68.6	0.64	
Kipp	91	29	59.4	1.84	
Lewiston	105	30	64.6	1.50	
Livingston	98	40	66.4	0.00	
Manhattan	99	32	65.6	0.64	
Martinsdale	104	26	63.6	T.	
Missoula	94	38	64.6	2.78	
Ovando	92	26	57.6	1.97	
Parrot	99	37	67.2	0.05	
Plains	90	32	64.8	2.20	
Poplar	105	37	71.0	.....	
Redlodge	110	31	64.0	0.00	
Ridge	103	36	69.2	1.83	
Ridgelawn	104	37	70.6	1.79	
St. Pauls	102	34	67.2	0.83	
Troy	91	34	61.8	3.99	
Twin Bridges	96	32	62.4	.....	
Utica	108	33	64.9	0.44	
Wibaux	102	36	68.2	1.70	
Yale	102	31	66.0	0.26	
Nebraska.					
Agate	.....	.....	.....	1.59	
Albion	94	45	69.9	3.57	
Alliance	.....	.....	.....	0.45	
Alma	103	49	74.8	1.01	
Ansley	106	42	72.7	0.88	
Arapaho *[1]	102	59	80.5	1.89	
Arborville *[1]	100	56	73.4	3.10	
Arlington	.....	.....	.....	1.66	
Ashland *a*	98	48	72.8	3.15	
Ashland *b*	.....	.....	.....	2.95	
Ashton	.....	.....	.....	4.51	
Aurora *[1]	98	58	75.7	1.53	
Bartley	.....	.....	.....	2.32	
Beatrice	100	49	73.0	2.37	
Beaver	103	46	75.0	2.26	
Bellevue	.....	.....	.....	5.27	
Benedict	.....	.....	.....	1.67	
Benkleman	.....	.....	.....	4.88	
Blair	96	47	70.6	2.04	
Bluehill	.....	.....	.....	3.49	
Bradshaw	.....	.....	.....	3.51	
Brokenbow *[1]	96	58	73.0	1.29	
Burchard	.....	.....	.....	4.85	
Burwell	.....	.....	.....	5.85	
Callaway	105	44	69.0	0.95	
Camp Clarke	103	43	70.8	1.56	
Central City	.....	.....	.....	3.71	
Chester	.....	.....	.....	1.71	
Cody	.....	.....	.....	1.50	
Columbus	97	47	70.8	2.34	
Crete	96	.....	.....	2.13	
Culbertson	.....	.....	.....	1.72	
Curtis	101	50	77.2	2.47	
David City	99	49	71.8	1.50	
Dawson	100	51	74.0	5.46	
Eden	.....	.....	.....	6.23	
Edgar *a*	101	57	78.4	2.54	
Ericson	.....	.....	.....	1.94	
Ewing	.....	.....	.....	1.22	
Fairbury	101	50	71.4	3.06	
Fairfield	98[c]	49[c]	73.8[c]	2.78	
Fairmont	99	47	71.7	1.59	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Nebraska—Cont'd.	°	°	°	*Ins.*	*Ins.*
Fort Robinson	104	37	71.2	1.05	
Franklin	97	47	73.5	1.84	
Fremont	98	47	71.0	1.22	
Geneva	100	47	73.7	1.48	
Genoa	100	47	71.3	1.95	
Gering	104	45	72.2	0.55	
Gordon	.....	.....	.....	2.00	
Gosper	.....	.....	.....	0.95	
Gothenburg	104	46	72.6	1.54	
Grand Island *a*	.....	.....	.....	3.44	
Grand Island *b*	101	42	73.8	4.18	
Greeley	.....	.....	.....	3.26	
Haigler	.....	.....	.....	3.23	
Hartington	99	43	69.0	1.90	
Harvard	99	49	72.4	1.23	
Hastings *[1]	100	59	75.4	3.88	
Hayes Center	.....	.....	.....	1.32	
Hay Springs	103	41	70.4	3.82	
Hebron	98	51	73.0	2.65	
Hickman	.....	.....	.....	6.90	
Holdrege	.....	.....	.....	1.94	
Hooper *[1]	95	52	72.0	3.50	
Imperial	103	45	73.0	2.43	
Johnstown	.....	.....	.....	0.25	
Kearney	.....	.....	.....	1.70	
Kennedy	106	42	71.2	2.25	
Kimball	98	41	69.8	0.40	
Kirkwood *[1]	96[c]	51	71.1	3.35	
Laclede	99	48	70.4	3.73	
Lexington	101	46	71.6	0.94	
Lodgepole	98	44	69.9	1.80	
Loup	.....	.....	.....	4.14	
Lynch	98	38	69.8	1.18	
Lyons	.....	.....	.....	2.12	
McCook	.....	.....	.....	2.55	
McCool	.....	.....	.....	1.79	
Madison	98	45	69.6	3.72	
Madrid *[5]	100	50	77.2	3.75	
Marquette	.....	.....	.....	4.11	
Merriman	.....	.....	.....	1.35	
Minden *a*	99	47	71.8	1.84	
Minden *b*	.....	.....	.....	1.54	
Monroe	.....	.....	.....	2.98	
Nebraska City *b*	.....	.....	.....	3.98	
Nebraska City *c*	97	49	70.9	3.88	
Nemaha *[1]	103	58	75.4	6.86	
Nesbit	102	45	70.4	3.41	
Norfolk	103	44	71.3	2.47	
North Loup	98	42	70.6	3.63	
Oakdale	100	44	70.6	2.05	
Odell	.....	.....	.....	2.15	
O'Neill	104	42	69.8	1.78	
Ord	.....	.....	.....	6.56	
Osceola	.....	.....	.....	1.65	
Ough	.....	.....	.....	0.65	
Palmer *[5]	110	58	80.6	3.78	
Palmyra *[1]	94	56	70.1	6.78	
Plattsmouth *a*	.....	.....	.....	6.70	
Plattsmouth *b*	.....	.....	.....	6.70	
Pleasanthill	.....	.....	.....	1.68	
Ravenna *a*	102	46	72.0	1.90	
Ravenna *b*	.....	.....	.....	2.40	
Redcloud *b* *[1]	100	56	76.7	0.61	
Republican *[1]	102	56	76.8	1.65	
Rulo	.....	.....	.....	5.80	
St. Libory	.....	.....	.....	2.68	
St. Paul	101	43	71.3	4.38	
Salem *[1]	94	58	77.1	6.62	
Santee	98	42	72.0	1.30	
Sargent	.....	.....	.....	4.42	
Schuyler	.....	.....	.....	2.36	
Seneca *[1]	94	50	68.3	0.55	
Seward	.....	.....	.....	3.13	
Smithfield	.....	.....	.....	0.91	
Spragg	.....	.....	.....	2.12	
Springview	97	45	70.4	2.37	
Stanton *[1]	98	54	69.5	3.11	
State Farm	99	47	72.1	3.55	
Strang	.....	.....	.....	1.48	
Stratton	.....	.....	.....	4.34	
Superior *[5]	102	54	75.8	3.75	
Syracuse	.....	.....	.....	5.89	
Tablerock	.....	.....	.....	5.80	
Tecumseh *b*	98	53	74.9	6.88	
Tecumseh *c*	.....	.....	.....	6.12	
Tekamah	97	46	70.2	4.40	
Thedford	.....	.....	.....	2.50	
Turlington	96	49	71.4	5.09	
Wakefield	98	44	69.2	3.74	
Wallace	.....	.....	.....	2.24	
Wauneta	.....	.....	.....	3.04	
Weeping Water *[1]	93	45	67.8	7.58	
Wellfleet	.....	.....	.....	0.72	
Westpoint	99	45	74.2	4.72	
Wilber *[1]	100	60	75.4	2.32	
Willard	.....	.....	.....	1.20	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Nebraska—Cont'd.	°	°	°	*Ins.*	*Ins.*
Wilsonville *[1]	100	58	74.4	1.70	
Winnebago	.....	.....	.....	2.84	
Wisner	.....	.....	.....	3.00	
Wymore *[1]	94	52	70.2	1.51	
York	.....	.....	.....	2.04	
Nevada.					
Austin	90	37	66.0	0.63	
Belmont	90	41	64.6	0.80	
Beowawe	.....	.....	.....	0.00	
Candelaria	102	40	70.0	0.45	
Carlin *[1]	98	49	70.3	T.	
Carson City	94	39	65.2	0.59	
Clover Valley	.....	.....	.....	0.41	
Cranes Ranch	.....	.....	.....	0.28	
Duck Valley	93	33	62.6	0.37	
Elko *[1]	106	50	67.8	0.30	
Elko (near)	.....	.....	.....	1.04	
Ely	97	35	66.0	0.01	
Empire Ranch	105	43	76.0	0.06	
Fenelon	.....	.....	.....	0.00	
Golconda	.....	.....	.....	0.26	
Halleck *[1]	102	50	69.5	0.00	
Hamilton	.....	.....	.....	0.30	
Hawthorne	100	42	73.4	0.00	
Hot Springs	.....	.....	.....	0.04	
Lee	.....	.....	.....	0.56	
Los Vegas	111	52	80.4	0.30	
Martins	88	38	64.6	0.49	
Mill City	.....	.....	.....	0.40	
Monitor Mill	95	31	65.6	0.13	
Palisade	.....	.....	.....	0.00	
Palmetto	95	28	63.6	1.00	
Reno State University	93	39	66.0	1.08	
Tecoma	.....	.....	.....	0.00	
Toano	.....	.....	.....	0.00	
Tybo	99	40	69.7	T.	
Verdi	.....	.....	.....	0.75	
Wadsworth	.....	.....	.....	0.05	
Wells	.....	.....	.....	0.05	
New Hampshire.					
Alstead	.....	.....	.....	3.32	
Berlin Mills	90	33	62.8	3.92	
Bethlehem	88	40	64.2	1.73	
Brookline *[1]	96	34	68.8	2.09	
Claremont	95	42	67.5	2.77	
Concord	94	34	66.3	1.79	
Durham	94	34	66.6	1.37	
Grafton	91	35	63.0	3.05	
Hanover	92	41	65.2	2.48	
Keene	94	38	65.4	2.61	
Littleton	85	42	64.6	1.36	
Nashua	95	37	68.0	1.90	
Newton	93	32	65.6	0.82	
North Conway	95	38	65.6	2.80	
Peterboro	91	34	64.6	2.51	
Plymouth	94	38	65.8	2.44	
Sanbornton	91	38	64.5	1.74	
Stratford	90	35	63.2	3.11	
Warner	.....	.....	.....	3.54	
New Jersey.					
Asbury Park	95	50	69.8	4.91	
Bayonne	96	51	71.1	2.45	
Belvidere	92	49	70.9	3.70	
Bergen Point	96	50	71.4	2.72	
Beverly	97	48	72.6	2.23	
Billingsport *[1]	93	57	73.0	3.12	
Bridgeton	95	50	73.5	3.84	
Camden	90	51	71.3	2.69	
Cape May C. H.	94	47	70.9	3.00	
Charlotteburg	90	39	66.2	3.87	
Chester	86	45	67.4	3.17	
Clayton	93	45	71.1	3.18	
College Farm	94	48	71.3	2.64	
Deckertown	89	47	68.6	4.13	
Dover	92	44	69.3	2.16	
Egg Harbor City	95	45	70.4	3.67	
Elizabeth	95	48	71.6	2.35	
Flemington	93	47	70.8	4.13	
Freehold	94	47	70.0	3.00	
Friesburg	92	47	71.4	3.12	
Hammonton	.....	.....	.....	3.81	
Hanover	91	47	70.2	2.28	
Hightstown	94	49	71.1	2.51	
Imlaystown	93	49	72.4	1.96	
Lambertville	95	49	72.4	3.69	
Layton	90	41	68.2	4.66	
Lebanon	.....	.....	.....	3.03	
Trenton	91	52	71.6	2.51	
Moorestown	94	49	71.5	3.00	
Mount Pleasant	.....	.....	.....	3.75	
Newark	95	48	70.4	2.96	
New Brunswick	95	49	71.8	2.89	
Newton	92	42	69.2	2.87	
Ocean City	92	44	66.8	3.52	
Oceanic	94	49	69.3	2.94	
Paterson	94	50	71.8	2.23	

Table II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
New Jersey—Cont'd.	°	°	°	*Ins.*	*Ins.*
Perth Amboy	96	50	71.8	4.11	
Plainfield	95	49	70.6	2.72	
Rancocas				3.20	
Rivervale	95	41	69.0	3.15	
Rocktown				1.10	
Roseland	94	44	68.4	1.55	
Salem	94	51	72.8	4.65	
Somerville	96	46	71.4	2.85	
South Orange	92	48	70.0	2.88	
Toms River	95	45	70.4	4.77	
Tuckerton	94	45	70.1	3.75	
Vineland	97	47	72.0	3.46	
Woodbine	91	46	71.4	3.10	
New Mexico.					
Albert	108[1]	47	73.9[e]	1.83	
Albuquerque	101	53	76.3	0.06	
Alma	98	42	71.2	T.	
Aztec	98	41	69.5	0.58	
Bellranch				1.38	
Bernalillo	100	46	74.4	0.14	
Bluewater	102	34	68.8	0.65	
Cambray				0.17	
East Lasvegas	89	41	66.0	3.59	
Engle	102	50	76.0	0.00	
Espanola	99	43	67.7	0.68	
Folsom	92	42	65.7	2.14	
Fort Bayard	100	48	73.1	0.01	
Fort Stanton	97	38	67.9	1.63	
Fort Union	92	43	65.1	4.67	
Fort Wingate	99	40	69.3	0.50	
Gage				0.27	
Galisteo	101	46	70.2	0.05	
Gallinas Spring	102	51	74.6	1.07	
Hillsboro	100	50	75.8	T.	
Horse Springs	97	39	68.2	2.00	
Las Vegas Hotsprings	90	43	65.0	2.95	
Lordsburg				0.00	
Los Lunas	100	42	73.3	T.	
Lower Penasco	98	50	75.2	2.60	
Lyons Ranch	111	44	76.4	T.	
Mesilla Park	106	47	78.4	0.16	
Olio	103	42	73.2	T.	
Raton	94	40	67.9	1.10	
Rincon	108	40	75.4	0.00	
Roswell	103	51	75.8	2.13	
Socorro	104	54	79.7	0.19	
Springer	96	33	66.3	1.94	
Strauss				0.13	
Whiteoaks	94	48	72.0	0.77	
Winsors Ranch	88	28	57.4	2.79	
Woodbury	100	48	73.3	0.50	
New York.					
Adams				2.95	
Addison	92	44	68.0	2.86	
Akron				1.27	
Alfred	89	37	64.6	3.13	
Angelica	90	37	65.5	2.56	
Appleton	93	45	65.1	1.16	
Arcade	89	41	64.3	2.12	
Atlanta	92	40	65.8	2.17	
Auburn	92	45	69.8	2.43	
Avon	95[1]	44[1]	68.1[1]	1.23	
Axton	86	34	61.6	2.90	
Baldwinsville	93	46	68.4	1.47	
Bedford *a*	92	43	67.6	2.17	
Beedes	88	38	63.3	2.45	
Big Sandy *[10]	86	47	63.6		
Bisbe Lodge				4.90	
Blue Mountain Lake				2.50	
Bolivar	88	33	63.3	2.98	
Bouckville	86	43	65.0	2.21	
Boyds Corners				2.63	
Brockport	93	45	67.4	0.94	
Caldwell	89	45	66.1	3.16	
Canajoharie	89	45	66.3	4.52	
Canton	88	39	64.2	5.65	
Carmel	89	48	70.4	2.60	
Carvers Falls	90	43	65.6	4.65	
Catskill	95	50	69.6	1.61	
Cedarhill	94	48	69.3	2.69	
Charlotte *[10]	94	49	66.8		
Chenango Forks				2.54	
Cooperstown	86	40	65.2	3.08	
Cortland	92	44	69.8	2.40	
Cutchogue	90	50	69.2	1.12	
Dekalb Junction				2.88	
Easton				2.02	
Elba	91	43	67.7	1.02	
Elmira	91	48	69.6	1.82	
Fleming	92	48	68.4	0.79	
Franklinville	86	36	63.8	2.56	
Fulton				1.48	
Gabriels	84	37	61.3	4.14	
Glens Falls	93	50	69.0	3.95	
Gloversville	90	42	66.2	1.92	
Greenwich	92	44	67.4	2.39	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
New York—Cont'd.	°	°	°	*Ins.*	*Ins.*
Haskinville				2.61	
Hemlock	89	46	68.8	1.07	
Honeymead Brook	91	47	67.0	3.15	
Honnedaga Lake				3.94	
Hoosick Falls				3.10	
Humphrey	85	41	64.1	2.53	
Indian Lake	85	36	62.8	3.11	
Ithaca	91	44	67.0	1.98	
Jamestown	88	45	66.3	2.70	
Jay	91	39	65.4	2.80	
Keene Valley	93	37	65.1	2.25	
King Ferry				1.59	
King Station				2.41	
Liberty	86	43	66.8	3.55	
Littlefalls	86	44	65.9	3.56	
Lockport	88	48	68.2	1.07	
Lowville	91	39	64.5	2.69	
Lyndonville				0.96	
Lyons	92[c]	51	67.9[c]	2.74	
Mayle				1.17	
Middletown	88	51	68.8	4.12	
Mohonk Lake	86	39	66.6	1.94	
Moira				4.41	
Mount Hope	96	45	69.6	3.31	
Newark Valley				2.88	
New Lisbon	86	38	62.8	2.98	
North Germantown				2.22	
North Hammond	84	48	66.8	2.51	
North Lake	83	41	61.7	2.59	
Number Four	82	40	61.4	3.26	
Nunda	93	43	67.5	0.75	
Ogdensburg	88	52	65.6	5.91	
Old Chatham				3.14	
Oneonta	90	41	68.4	3.41	
Oxford	89	42	65.0	3.77	
Palermo	93	41	65.6	1.30	
Penn Yan	96	43	70.2	0.78	
Perry City	93	40	66.8	1.51	
Phœnix				2.07	
Plattsburg Barracks	94	34	65.8	4.21	
Port Byron	92	45	68.5	1.57	
Port Jervis	90	49	69.0	4.99	
Red Hook				1.84	
Richmondville	87	45	65.5	2.37	
Ridgeway	91	47	66.6	1.40	
Rome	89	44	65.4	3.27	
Romulus	94	42	68.8	0.92	
Rose				2.14	
St. Johnsville	91	43	67.4	2.93	
Salisbury Mills				3.93	
Saranac Lake	87	36	62.5	2.46	
Saratoga Springs	91	48	66.7	2.16	
Schenectady	92	49	68.9	5.35	
Schenevus				4.17	
Scottsville				1.95	
Setauket	92	47	67.8	1.38	
Shortsville	92	46	67.2	1.18	
Skaneateles				1.44	
South Canisteo	86	41	64.6	5.11	
Southeast Reservoir				2.08	
Straits Corners	94	35	66.6	2.25	
Ticonderoga	96	42	67.6	4.85	
Volusia	91	44	65.4	1.46	
Walton	94	40	68.9	3.64	
Wappingers Falls	93	50	70.3	2.82	
Warwick				3.27	
Watertown	89	42	66.0	1.62	
Waverly	93	41	68.0	2.75	
Wedgwood	91	44	67.2	1.91	
West Berne	94	40	68.2	2.77	
West Chazy	89	42	64.8		
Westfield *a*	90	46	67.2	2.03	
Westfield *b*	91	47	66.8	1.41	
Westfield *c*	89	46	66.4	1.44	
Williamson				0.86	
Windham	87	38	63.4	3.59	
North Carolina.					
Abshers	91	52	73.9	9.28	
Asheville				8.11	
Biltmore	90	52	68.2	7.91	
Bryson City				6.31	
Chapelhill	98	54	77.6	4.45	
Cherryville	92	56	74.3	6.39	
Currituck				1.02	
Edenton	94	54	76.8	3.06	
Experimental Farm				4.54	
Fairbluff				8.19	
Fayetteville	92	54	75.5	6.47	
Goldsboro	93	54	76.5	2.69	
Greensboro	92	56	74.3	5.65	
Henderson	92	54	75.3	4.81	
Hendersonville	86	53	70.2	8.79	
Henrietta	91	57	74.6	6.99	
Highlands	78	47	64.1	19.29	
Horse Cove	84	52	66.6	19.92	
Kinston	98	51	78.2	1.86	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
North Carolina—Cont'd	°	°	°	*Ins.*	
Linville	78	45	64.5	7.07	
Littleton	95	54	74.8	6.01	
Louisburg	95	53	76.8	3.69	
Lumberton	93	56	76.8	3.17	
Marion	91	55	72.8	10.50	
Marshall	91	53	72.0	8.33	
Moncure	93	54	76.2	6.74	
Monroe	92	49	74.5	5.57	
Morganton	92	55	73.8	5.97	
Mountairy	88	51	70.0	8.56	
Mount Pleasant	94	55	75.6	4.87	
Murphy				8.87	
Newbern	94	52	76.4	5.82	
Oakridge	94	51	74.1	4.69	
Patterson *[1]	84	53	68.0	10.55	
Pittsboro	93	51	75.6	5.98	
Rockingham	96	53	77.1	8.88	
Roxboro	94	54	75.6	1.98	
Salem	93	52	74.9	3.88	
Salisbury	98	56	76.6	4.81	
Saxon	94	52	74.4	7.81	
Selma				2.25	
Settle	94	52	74.6	5.57	
Sloan	93	50	74.7	5.29	
Soapstone Mount	92	48	74.0	4.97	
Southern Pines *a*				5.02	
Southport	89	57	76.2	6.26	
Springhope *[1]	92	58	75.3	4.58	
Tarboro	99	51	77.7	3.54	
Washington	96	52	78.3	4.53	
Waynesville	86	50	68.5	7.64	
Weldon *a*	93	54	75.2	2.64	
Weldon *b*				2.53	
North Dakota.					
Amenia	99	32	66.9	1.68	
Ashley	98	35	67.0	0.96	
Berlin	101	29	64.8	0.95	
Buxton	98	33	65.3	0.61	
Churchs Ferry	100	27	64.8	0.53	
Coalharbor	98	37	67.5	3.04	
Devils Lake	101	33	68.0	2.06	
Dickinson	105	36	69.2	0.83	
Donnybrook				0.65	
Dunseith	102	32	65.2	0.48	
Ellendale	100	36	68.5	0.36	
Falconer	98	35	68.6	2.74	
Fargo	98	31	66.0	2.11	
Forman	97	32	67.2	0.59	
Fort Yates	101	36[f]	68.2[d]	1.15	
Fullerton	100	32	67.5	0.66	
Gallatin	101	31	64.6	1.84	
Glenullin	100	38	68.8	1.46	
Hamilton	106	32	65.7	1.06	
Hannaford	100	31	66.6	1.18	
Jamestown	101	35	66.6	1.65	
Langdon	100	33	63.8	2.08	
Larimore	105	33	66.1	0.90	
Lisbon	101	34	66.6	1.07	
McKinney	105	33	66.2	0.43	
Mayville	105	34	69.3	0.27	
Medora	107	31	73.2	1.13	
Melville	98	34	67.6	2.92	
Milton	99	33	64.2	1.35	
Minnewaukon	102	32	66.8	1.00	
Minot	98	32	67.0	1.58	
Minto	109	32	67.0	1.86	
Napoleon	95	32	66.6	3.45	
New England	103	35	68.4		
Oakdale	98[c]	41[c]	68.2[c]	T[c]	
Pembina	103	30	65.9	0.90	
Portal	102	34	64.9	0.50	
Power	101	28	64.0	2.39	
St. John	107	32	64.2	0.66	
Steele	99	35	68.4	1.10	
Towner	98	32	64.9	2.20	
University	98	35	65.9	0.88	
Wahpeton	97	32	67.6	3.09	
Willow City	96	34	64.8	0.51	
Ohio.					
Akron	92	44	67.7	2.83	
Annapolis	96	39	68.4	2.94	
Ashtabula	89	47	65.9	0.81	
Atwater				3.48	
Bangorville	90	47	69.5	2.45	
Bellefontaine	88	50	69.3	5.65	
Bement				3.09	
Benton Ridge	92	43	68.6	2.54	
Bethany	94	47	71.4	4.94	
Bigprairie	88	44	68.5	3.21	
Binola				1.48	
Bladensburg	90	40	68.0	1.48	
Bloomingburg	91	47	71.0	1.18	
Bowling Green	88	42	67.3	3.80	
Bucyrus	90	44	69.6	4.64	
Cambridge	91	43	69.2	2.12	
Camp Dennison	93	50	74.0	1.49	

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Ohio—Cont'd.	°	°	°	*Ins.*	*Ins.*
Canal Dover	93	47	69.8	5.31	
Canton	91	48	70.4	3.87	
Cedarville	......	......	......	2.44	
Celina	88	44	68.3	4.07	
Chillicothe	94	49	73.4	4.23	
Circleville	90	48	71.6	3.54	
Clarksville	90	50	71.9	2.80	
Cleveland *a*	86	50	67.2	2.26	
Cleveland *b*	87	49	67.9	1.87	
Coalton	92	44	71.8	2.91	
Colebrook	91	38	66.1	2.75	
Dayton *a*	......	......	......	5.66	
Dayton *b*	94	46	72.4	3.96	
Defiance	88	42[d]	67.2	5.36	
Delaware	92	45	70.6	1.99	
Demos	94	48	70.0	3.74	
Elyria	91	44	67.8	2.70	
Findlay	93	46	70.6	1.60	
Frankfort	89	46	71.1	2.44	
Garrettsville	92	38	66.9	1.42	
Granville	91	44[c]	70.4	2.42	
Gratiot	88	45	70.3	3.66	
Green	93	50	73.6	1.48	
Greenfield	90	52	73.0	1.95	
Greenhill	89	42	67.4	3.81	
Greenville	83	48	68.6	4.09	
Hanging Rock	92	49	73.8	2.85	
Hedges	......	......	......	4.22	
Hillhouse	90	39	64.8	1.74	
Hillsboro	89	44	69.5	2.35	
Hiram	89	42	67.5	1.91	
Hudson	95	41	68.6	1.43	
Jacksonboro	91	50	72.1	2.55	
Kenton	92	47	70.5	5.04	
Killbuck	90	43	69.6	3.94	
Lancaster	91	45	70.8	1.44	
Leipsic [1]	91	36	67.8	......	
McConnelsville	92	43	70.8	2.60	
Mansfield	......	......	......	4.15	
Marietta	88	51	72.0	5.09	
Marion	90	45	70.7	5.64	
Medina	92	41	67.6	2.55	
Milfordton	89	45	69.0	2.45	
Milligan	91	43	70.0	3.51	
Millport	88	42	67.6	3.71	
Montpelier	92	42	66.7	6.61	
Napoleon	88	44	67.3	5.47	
Neapolis	......	......	......	3.70	
New Alexandria	93	51	70.5	3.60	
New Berlin	90	45	68.4	2.05	
New Bremen	89	43	70.4	3.91	
New Holland	92	46	72.2	3.15	
New Paris	86	47	69.4	6.64	
New Richmond	95	49	73.7	1.05	
New Waterford	94	45	68.7	3.58	
North Lewisburg	94	47	70.4	2.20	
North Royalton	94	43	69.3	2.20	
Norwalk	96	43	68.4	3.69	
Oberlin	94	42	68.3	3.92	
Ohio State University	92	46	71.5	4.10	
Orangeville	94	40	68.6	1.50	
Ottawa	90	44	69.2	2.89	
Pataskala	95	45	71.2	1.78	
Perry	......	......	......	2.16	
Philo	91	40	69.4	1.71	
Plattsburg	90	47	69.9	2.44	
Pomeroy	94	49	73.0	3.63	
Portsmouth *a*	......	......	......	2.45	
Portsmouth *b*	95	50	75.2	2.50	
Pulse	......	......	......	2.30	
Richwood	94	45	72.2	2.49	
Ripley	90	50	72.6	5.34	
Rittman	90	42	68.0	2.41	
Rockyridge	91	46	68.0	4.26	
Rosewood	89	47	69.6	2.56	
Shenandoah	91	43	67.8	3.25	
Sidney	93	47	72.1	3.82	
Sinking Spring	90	51	72.4	2.78	
Springboro	......	......	......	3.11	
Strongsville	......	......	......	1.36	
Thurman	91	48	73.1	2.29	
Tiffin	88	45	68.6	3.80	
Upper Sandusky	92	45	69.9	2.57	
Urbana	86	48	69.4	4.00	
Vermillion	88	43	66.2	2.75	
Vickery	92	43	67.9	3.36	
Walnut	......	......	......	1.95	
Warren	92	42	68.0	1.94	
Warsaw	92	39	68.4	2.85	
Wauseon	91	40	68.3	3.01	
Waverly	94	47	73.8	2.93	
Waynesville	90	49	70.7	2.15	
Wellington	92	41	70.6	2.32	
Westerville	87	48	69.0[e]	2.51	
Willoughby	......	......	......	1.66	
Wooster	90	44	68.4	3.71	
Ohio—Cont'd.	°	°	°	*Ins.*	*Ins.*
Youngstown	......	......	......	2.57	
Zanesville	......	......	......	1.70	
Oklahoma.					
Arapaho	105	59	78.8	2.22	
Burnett	100	53	78.2	1.19	
Clifton	100	58	78.4	1.37	
Fort Reno	99	55	76.8	1.06	
Fort Sill	101	60	78.2	3.40	
Guthrie	99	60	77.4	2.56	
Hennessey	102	56	77.4	3.40	
Jefferson	104	54	76.0	2.63	
Jenkins	103	57	77.8	3.48	
Kingfisher	103	59	78.3	2.10	
Mangum	102	60	76.6	3.85	
Newkirk	102	50	76.1	0.60	
Norman	101	54	77.4	0.13	
Osage	100	55	77.2	7.18	
Prudence	105	54	78.2	2.21	
Sac and Fox Agency	100	54	76.8	1.19	
Stillwater	98	58	77.0	3.28	
Taloga	103	55[j]	75.6[e]	1.88	
Waukomis	106	55	78.9	3.00	
Wood	......	......	......	1.65	
Oregon.					
Albany *a* *[1]	92	53	66.0	1.21	
Albany *b*	......	......	......	2.05	
Alpha	89	40	60.5	2.18	
Arlington	94	58	75.8	0.52	
Ashland *b*	90	28	64.9	2.50	
Aurora *[1]	87	54	64.7	1.34	
Aurora (near)	90	40	61.5	2.34	
Bandon	70	48	58.0	2.39	
Bay City	81	40	58.8	8.12	
Beulah	100	33	66.2	1.01	
Blalock	98	48	71.4	1.18	
Brownsville *[1]	86	52	66.5	0.41	
Bullrun	87	48	61.8	3.83	
Burns	94	38	63.0	0.34	
Cascade Locks	88	44	64.0	3.38	
Comstock *[1]	96	52	65.2	1.36	
Coquille	......	......	......	2.28	
Corvallis	89	41	61.6	2.03	
Dayville	96	38	65.0	0.80	
Ella	......	......	......	0.79	
Eugene	......	......	......	2.55	
Fairview	90	52	67.6	1.51	
Falls City	85	39	61.1	2.99	
Gardiner	76	45	59.6	2.25	
Glenora	92	37	60.0	7.22	
Government Camp	79	32	52.9	4.80	
Grants Pass	92	40	65.5	2.35	
Happy Valley	91	26	66.2	1.13	
Hare	73	41	55.0	2.90	
Hood River (near)	96	42	64.8	1.00	
Jacksonville	93	43	63.9	3.79	
Joseph	90	33	60.0	1.10	
Junction City *[1]	92	52	63.4	1.10	
Kerby	95	37	64.6	1.97	
Klamath Falls	91	30	60.0	0.00	
Lafayette *[1]	94	58	66.2	2.51	
Lonerock	92	30	57.0	1.49	
McMinnville	92	41	62.1	2.52	
Merlin *[1]	94	50	71.2	3.16	
Monmouth *a* *[1]	88	50	61.2	2.43	
Monmouth *b*	91	40	60.8	2.59	
Monroe	87	41	62.0	1.50	
Mount Angel	90	48	62.8	2.07	
Nehalem	......	......	......	8.65	
Newberg	95	40	62.2	2.91	
Newbridge	97	34	65.2	0.56	
Newport	68	42	56.0	3.76	
Pendleton	103	40	70.1	1.09	
Placer	......	......	......	2.25	
Prineville	97	30	62.5	0.89	
Riddles *[1]	90	50	64.9	2.10	
Riverside	100	31	66.9	0.95	
Salem *b*	92	42	65.8	2.20	
Sheridan *[1]	87	45	61.1	1.79	
Silverlake	92	24	60.8	0.42	
Silverton *[1]	88	52	66.0	1.95	
Siskiyou *[1]	82	44	63.6	......	
Sparta	90	32	61.7	0.21	
Springfield *[1]	84	52	64.0	2.06	
Stafford	91	43	62.6	2.85	
The Dalles	96	43	68.1	0.47	
Tillamook	......	......	......	4.49	
Toledo	75	37	56.0	4.05	
Umatilla	......	......	......	0.17	
Vale	100	36	67.5	0.30	
Vernonia	94	34	56.4	2.59	
Westfork *[1]	90	52	67.3	2.60	
Weston	99	32	65.2	0.83	
Williams	88	36	63.7	2.88	
Pennsylvania.					
Altoona	91	48	69.2	2.53	
Athens	97	42	68.8	2.16	
Pennsylvania—Cont'd.	°	°	°	*Ins.*	*Ins.*
Beaver Dam	......	......	......	2.66	
Bethlehem	......	......	......	2.43	
Brookville	......	......	......	3.25	
Browers Lock	......	......	......	3.88	
Butler	91	44	68.6	3.08	
Carlisle	93	51	72.2	3.82	
Cassandra	88	43	66.6	7.09	
Centerhall	88	46	69.0	3.70	
Chambersburg	95	48	71.2	2.82	
Coatesville	96	50	72.6	2.88	
Confluence	92	46	69.8	5.88	
Coopersburg	90	52	71.0	1.35	
Davis Island Dam	......	......	......	4.35	
Derry Station	95	46	72.4	5.28	
Driftwood	......	......	......	0.85	
Duncannon	......	......	......	2.27	
Dushore	91	40	66.6	4.10	
East Bloomsburg	......	......	......	3.50	
East Mauch Chunk	95	45	70.4	1.82	
Easton	90	51	71.6	2.27	
Ellwood Junction	......	......	......	3.59	
Emporium	88	44	67.6	2.43	
Ephrata	93	51	71.6	2.89	
Everett	91	42	68.8	5.97	
Forks of Neshaminy *[1]	93	56	71.6	5.77	
Franklin	91	41	68.2	2.86	
Freeport	......	......	......	4.33	
Girardville	......	......	......	3.70	
Greensboro	91	50	71.5	6.07	
Hamburg	......	......	......	4.20	
Hawthorn	94	44	69.1	4.37	
Hews Island Dam	......	......	......	4.34	
Huntingdon *a*	95	48	70.4	2.82	
Huntingdon *b*	......	......	......	2.77	
Irwin	......	......	......	3.52	
Johnstown	95	49	71.0	6.08	
Keating	......	......	......	2.72	
Kennett Square	90	50	70.6	4.77	
Lancaster [f]	93	51	71.0	2.90	
Lawrenceville	91[c]	35[c]	66.6[c]	2.02	
Lebanon	93	38	71.1	3.64	
Leroy	87	45	67.2	3.40	
Lewisburg	93	47	71.0	3.21	
Lockhaven *a*	97	47	73.0	1.60	
Lockhaven *b*	......	......	......	1.53	
Lock No. 4	......	......	......	2.56	
Lycippus	90	49	69.7	5.06	
Mifflin	......	......	......	2.30	
Oil City	......	......	......	3.84	
Parker	......	......	......	4.57	
Philadelphia	94	55	73.6	2.65	
Quakertown	95	46	70.7	2.65	
Reading [2]	......	......	70.7	2.61	
Renovo *a*	......	......	......	3.23	
Renovo *b*	91	48	70.4	3.91	
Saegerstown	90	40	67.2	3.13	
Scranton	90	45	68.8	3.54	
Selinsgrove	94	50	71.8	2.09	
Shawmont	......	......	......	2.14	
Sinnamahoning	......	......	......	0.92	
Smethport	88	38	65.0	1.98	
Somerset	90	40	64.8	10.29	
South Eaton	87	41	68.2	3.52	
State College	90	48	68.6	2.54	
Sunbury	......	......	......	0.85	
Swarthmore	92	57	72.9	3.07	
Swiftwater	85	46	65.1	1.80	
Towanda	90	44	68.4	3.49	
Troutrun	......	......	......	2.52	
Uniontown	92	51	71.1	5.67	
Warren	89	44	65.2	4.11	
Wellsboro	89	40	67.1	2.90	
Westchester	92	54	71.7	3.62	
West Newton	......	......	......	3.15	
Wilkesbarre	91	48	69.6	3.39	
Williamsport	95	50	71.7	2.89	
York	94	47	71.5	4.81	
Rhode Island.					
Bristol	87	44	64.8	1.69	
Kingston	89	39	64.6	1.21	
Providence *a*	94	46	70.3	2.19	
Providence *c*	92	42	67.4	2.37	
South Carolina.					
Allendale	91	60	76.0	7.06	
Batesburg	96	60	77.3	4.44	
Beaufort	93	62	78.7	10.65	
Blackville	94	57	77.8	9.60	
Calhoun Falls	......	......	......	10.79	
Camden	......	......	......	6.10	
Cheraw *a*	96	56	76.2	8.71	
Cheraw *b*	......	......	......	7.34	
Clemson College	92	59	74.4	14.29	
Conway	......	......	......	9.79	
Darlington	......	......	......	6.09	
Edisto	......	......	......	8.55	
Effingham	......	......	......	6.38	

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.)			Precipitation.	
	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
South Carolina—Cont'd.	°	°	°	*Ins.*	*Ins.*
Florence	94	58	77.2	4.87	
Gaffney	.....	.....	.....	8.40	
Georgetown	93	52	76.8	9.55	
Gillisonville	96	55	77.5	6.10	
Greenville	86	58	71.8	9.75	
Greenwood	92	61	76.4	8.01	
Holland	89	57	73.1	15.43	
Kingstree *a*	90	55	75.6	7.09	
Kingstree *b*				7.22	
Liberty	92	60	75.2	12.88	
Little Mountain	94	60	77.1	6.49	
Longshore	94	58	76.4	8.69	
Pinopolis *[1]	89	60	75.2	8.28	
St. George	94	57	76.4	7.64	
St. Matthews	94	60	77.4	7.12	
St. Stephens				8.62	
Santuck	92	55	75.8	6.65	
Shaws Fork	.....	54		6.51	
Smiths Mills	.....	.....	.....	8.12	
Societyhill	94	58	77.8	7.02	
Spartanburg	90	56	74.0	7.94	
Statesburg	92	60	77.5	5.03	
Summerville	91	57	75.4	10.59	
Temperance	95	54	76.3	5.51	
Trenton	91	63	77.8	4.15	
Trial	90	53	73.6	10.05	
Walhalla	88	56	71.8	15.19	
Winnsboro	89	59	73.8	4.86	
Winthrop College	93[c]	56	74.0[c]	6.50	
Yemassee	97	64	80.7	5.46	
Yorkville	95	59	77.5	7.66	
South Dakota.					
Aberdeen	100	36	69.4	1.71	
Academy	103	40	72.6	0.95	
Alexandria	99	35	71.0	2.48	
Armour	96	35	70.2	3.06	
Ashcroft	107	36	69.8	1.05	
Bowdle	96	34	67.8	1.31	
Brookings	92	32	66.1	1.62	
Canton	95	39	69.8	2.02	
Centerville	.....	.....		1.60	
Chamberlain	100	45	72.5	3.78	
Clark	92	31	66.2	2.25	
Desmet	90	33	67.0	3.04	
Doland	96	29	69.0	3.03	
Elkpoint	99	41	70.3	1.73	
Farmingdale	.....	.....	.....	2.75	
Faulkton	96	34	68.6	1.65	
Flandreau	92	35	67.6	2.93	
Forestburg	98	30	68.4	2.66	
Forest City	105	45	74.2	1.50	
Fort Meade	95	45	69.3	3.00	
Gannvalley	96	39	71.0	6.90	
Grand River School	99	34	70.9	0.77	
Greenwood	104	43	73.4	0.67	
Hartman *	96	37	66.6	3.02	
Highmore	.....	.....	.....	2.53	
Hitchcock	.....	.....	.....	2.69	
Hotch City	102	40	71.0	3.82	
Hot Springs	103	40	71.0	2.51	
Howard	93	35	66.6	3.66	
Interior	109	41	72.2	4.50	
Ipswich	100	29	67.8	0.11	
Kimball	100	43[c]	71.1[c]	2.40	
Leola	97	34	67.6	0.96	
Leslie	105	35	70.0	2.55	
Mellette	99	33	68.0	0.78	
Menno	100	37	70.3	2.28	
Millbank	95	36	67.0	1.54	
Mitchell	96	34	69.4	2.70	
Oelrichs	106	41	73.4	1.50	
Parker	95	39	68.6	2.74	
Plankinton	96	35	70.9	2.58	
Redfield	95	32	67.7	3.03	
Rochford	96	26	60.6	2.42	
Rosebud	100	43	72.9	2.35	
St. Lawrence	101	28	70.6	2.43	
Shiloh	104	45	72.4	2.17	
Sioux Falls	96	35	66.8	3.45	
Sisseton Agency	94	36	66.8	1.08	
Spearfish	102	42	69.0	3.40	
Tyndall	101	.....	.....	0.76	
Watertown	93	31	66.8	2.17	
Waubay	98	33	66.0	0.56	
Wentworth	94	35	66.8	2.70	
Wolsey	.....	.....	.....	5.43	
Tennessee.					
Andersonville	92	40	72.2	3.18	
Arlington	93	62	74.9	13.42	
Ashwood	91	58	74.6	11.67	
Benton	91	62	74.5	10.32	
Bluff City	.....	.....	.....	4.02	
Bolivar	91	61	74.8	13.05	
Bristol	91	54	73.0	2.26	
Brownsville	94	62	74.9	10.81	
Byrdstown	91	56	74.5	9.86	
Tennessee—Cont'd.	°	°	°	*Ins.*	*Ins.*
Carthage	.....	.....	.....	8.77	
Clarksville	88	60	73.6	10.77	
Clinton	.....	.....	.....	9.23	
Covington	93	65	76.3	10.95	
Decatur	92	59	74.9	7.35	
Dyersburg	92	64	76.5	11.19	
Elizabethton	93	50	74.2	4.41	
Elk Valley	.....	.....	.....	5.90	
Erasmus	.....	.....	.....	8.78	
Florence	88	60	74.3	10.88	
Franklin	89	60	74.1	11.94	
Grace	.....	.....	.....	11.34	
Greeneville	92	50	71.8	7.29	
Harriman	88	58	73.3	7.70	
Hohenwald	91	55	73.8	17.93	
Iron City	92	57	74.5	13.06	
Jackson	90	65	76.0	13.90	
Johnsonville	93	56	74.0	12.16	
Jonesboro *[1]	87	50	72.8	3.30	
Kingston	.....	.....	.....	7.29	
Lafayette *[5]	90	58	73.3	10.19	
Lewisburg	93	60	74.7	13.46	
Lynnville	90	61	74.6	11.91	
McKenzie	91	61	75.2	17.83	
McMinnville	90	58	73.2	8.14	
Madison	95	57	75.3	12.60	
Maryville *[5]	93	58	74.6	6.89	
Milan	92	61	75.0	16.38	
Newport	90	56	74.4	6.77	
Nunnelly	89	55	73.4	11.61	
Oakhill	91	55	73.8	12.22	
Palmetto	93	62	74.6	13.97	
Peryear *[5]	90	60	76.6	10.75	
Pope	94	54	73.8	13.55	
Rogersville	88	53	72.2	5.86	
Rugby	89	53	71.7	7.80	
Savannah	94	60	75.6	13.49	
Sewanee	87	54	70.6	11.24	
Silverlake	87	49	68.2	5.57	
Springfield	90	56	74.1	8.60	
Tazewell	.....	.....	.....	7.95	
Tellico Plains	91	59	74.2	7.70	
Tracy City	87	55	71.8	7.89	
Trenton	91	60	75.0	12.05	
Tullahoma	87	59	72.6	12.30	
Union City	90	62	74.1	5.60	
Wildersville	87	61	73.9	15.85	
Yukon	90	60	74.1	10.79	
Texas.					
Alice	103	70	85.8	0.10	
Alpine	104	55	77.8	1.30	
Alvin	.....	.....	.....	3.22	
Anna	102	60	80.0	2.12	
Anson	.....	.....	.....	T.	
Arthur	.....	.....	.....	3.50	
Austin *a*	103	64	83.4	0.60	
Austin *b* *[5]	99	64	81.9	.....	
Ballinger	105	61	80.4	0.07	
Beaumont	99	67	81.7	12.70	
Beeville	102	66	84.4	0.00	
Big Springs	.....	.....	.....	1.71	
Blanco	100	60	80.4	T.	
Boerne *[1]	99	67	80.4	1.08	
Bowie	104	62	80.2	0.25	
Brazoria	94	69	81.4	4.02	
Brenham	96	68	81.7	2.44	
Brighton	99	69	83.7	0.66	
Brownwood	108	62	84.3	T.	
Burnet *[1]	96	64	79.7	2.78	
Camp Eagle Pass	105	63	83.0	3.20	
Coleman	104	62	79.2	0.50	
College Station	95	67	81.0	0.23	
Colorado	108	.....	.....	0.42	
Columbia	93	67	80.8	3.15	
Corsicana	104	66	83.5	1.46	
Cuero	100	64	84.0	5.62	
Dallas	103	62	81.4	1.72	
Danevang	100	66	83.3	3.38	
Dublin	103	63	80.4	0.66	
Duval	98	66	81.8	0.20	
Emory	95	60	79.8	4.17	
Estelle	104	62	82.6	0.57	
Forestburg	.....	.....	.....	0.10	
Fort Brown	102	71	86.4	.....	
Fort Clark	102	66	84.0	1.10	
Fort McIntosh	106	66	87.2	0.43	
Fort Ringgold	107	66	87.4	T.	
Fort Stockton	.....	.....	.....	1.75	
Fredericksburg *[1]	98[c]	65[c]	80.3[c]	0.38	
Grapevine	103[c]	64	82.6[c]	0.26	
Greenville	99	62	80.9	3.59	
Hale Center	98	59	76.0	3.19	
Hallettsville	100	67	83.6	0.76	
Haskell	.....	.....	.....	0.70	
Hearne	99	71	85.1	0.90	
Henrietta	105	61	80.9	5.42	
Texas—Cont'd	°	°	°	*Ins.*	*Ins.*
Hewitt	.....	.....	.....	3.70	
Hondo	95	.....	.....	0.34	
Houston	96	65	81.0	3.75	
Hulen	101[d]	68	81.8	7.81	
Huntsville	99	68	81.8	3.22	
Ira	107	59	79.4	1.12	
Jacksonville	93	65	79.2	6.55	
Jasper	95	63	80.8	5.13	
Kaufman	100	65	84.2	.....	
Kent	.....	.....	.....	1.23	
Lampasas	102	61	82.2	0.64	
Langtry	107	.....	.....	2.31	
Lapara	.....	.....	.....	1.08	
Laureles Ranch	.....	.....	.....	2.21	
Llano *[5]	103	67	81.2	0.30	
Longview	101	66	82.4	3.27	
Luling	101	66	83.6	0.79	
Mann	98	63	80.0	0.54	
Mount Blanco	100	54	75.6	3.10	
Nacogdoches	103	64	83.8	6.59	
New Braunfels	100	66	82.6	T.	
Panter	.....	.....	.....	4.50	
Paris *a*	101	63	80.7	1.15	
Point Isabel *[1]	96	80	85.4	1.00	
Rhineland	106	62	81.4	1.16	
Rockisland	96	67	81.4	1.14	
Runge	104	64	84.8	1.36	
Sabine	100	68	84.2	10.26	
Saginaw *[1]	103	68	81.6	0.50	
Sanderson	105	67	86.6	2.50	
San Marcos	101	65	83.2	0.00	
Sherman	99	64	81.7	0.85	
Sugarland	97	65	81.7	4.26	
Sulphur Springs	96	64	80.1	2.81	
Temple *a*	100	66	82.3	0.00	
Temple *b*	102	58	79.2	0.03	
Trinity	96	65	80.9	4.76	
Tulia	101	54	73.8	3.25	
Turnersville	98	64	80.8	1.54	
Tyler	101	62	84.8	5.32	
Valentine	102	58	78.2	4.70	
Victoria	.....	.....	.....	3.79	
Waco	102	61	84.2	2.62	
Waxahachie	105	61	82.0	1.30	
Weatherford	104	62	81.8	0.12	
Wichita Falls	.....	.....	.....	0.48	
Utah.					
Alpine	.....	.....	.....	T.	
Bluecreek	.....	.....	.....	T.	
Castledale	98	44	69.6	0.25	
Corinne	104	39	72.8	0.20	
Deseret	106	44	72.6	0.03	
Farmington	.....	.....	.....	0.25	
Fillmore	105	40	72.5	0.60	
Fish Springs	104	48	77.9	0.07	
Fort Duchesne	101	40	69.0	0.06	
Frisco	99	50	75.0	0.04	
Giles	110	45	76.9	0.07	
Grover	95	42	67.3	0.33	
Heber	95	34	63.3	0.20	
Henefer	101	30	62.9	0.20	
Hite	111	59	83.0	.....	
Holyoke	105	.....	.....	1.00	
Huntsville	.....	.....	.....	0.61	
Kelton *[1]	102	60	78.2	0.00	
Levan	98	42	69.3	0.04	
Loa	94	35	62.9	0.45	
Logan	95	46	70.4	0.19	
Manti	103	35	68.2	0.00	
Marysvale *[1]	88	32	50.7	0.00	
Meadowville	.....	.....	.....	0.01	
Minersville	101	42	72.1	0.13	
Moab	103	39	73.8	0.26	
Mount Pleasant	99	41	68.0	0.00	
Ogden *[1]	101	50	75.1	0.31	
Park City	91	36	63.5	T.	
Parowan	97	40	67.9	0.13	
Pinto	95	32	63.0	0.25	
Richfield	98	40	69.2	T.	
St. George	107	46	76.0	0.20	
Scipio	101	32	68.2	0.10	
Snowville	96	40	67.4	0.00	
Soldier Summit	81	.....	.....	0.00	
Thistle	108	34	67.4	0.10	
Tooele	97	46	72.8	0.12	
Tropic	97	30	64.5	0.27	
Vernal	99	43	70.4	0.14	
Wellington	100	36	66.8	0.27	
Woodruff	93	31	59.8	T.	
Vermont.					
Bennington	89	44	67.8	2.63	
Burlington	86	50	69.2	1.96	
Chelsea	85	40	62.8	2.01	
Cornwall	92	44	66.7	2.33	
Derby	85	38	62.6	3.58	
Enosburg Falls	87	37	63.5	4.21	

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.)			Precipitation.		Stations	Temperature. (Fahrenheit.)			Precipitation.		Stations.	Temperature. (Fahrenheit.)			Precipitation.	
	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.		Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.		Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
Vermont—Cont'd.	°	°	°	*Ins.*	*Ins.*	*Washington*—Cont'd.	°	°	°	*Ins.*	*Ins.*	*Wisconsin*—Cont'd.	°	°	°	*Ins.*	*Ins.*
Hartland	89	40	62.8	2.88		Rosalia	92	31	61.2	0.26		Pepin	98	41	69.2	2.31	
Jacksonville	84	37	62.3	2.27		Sedro	85	34	59.2	4.27		Pine River	93	39	65.0	2.64	
Manchester	90	43	64.4	2.02		Shoalwater Bay *[10]	77	40	58.2	......		Portage	93	42	67.5	2.15	
Norwich	92	39	64.0	2.65		Snohomish	83	40	60.8	3.89		Port Washington	92	37	61.5	1.85	
St. Johnsbury	87	39	64.1	1.62		Southbend	92	40	58.9	7.78		Prairie du Chien *a*	97	47	70.8	1.62	
Vernon *[6]	91	57	70.8	3.34		Sprague	......	......	......	0.02		Prairie du Chien *b*	......	......	......	1.70	
Wells	88	46	66.5	3.44		Sunnyside	95	44	68.8	0.21		Prentice	102	35	64.6	3.03	
Woodstock	88	40	64.0	3.60		Union	83	37	60.0	6.70		Racine	90	44	64.2	2.21	
Virginia.						Vancouver	88	43	62.2	2.66		Sharon	90[h]	38[h]	66.2[h]	1.84	
Alexandria	96	54	74.4	6.60		Vashon	79	44	60.0	3.06		Shawano	94	36	64.6	2.35	
Ashland	92	54	72.8	5.25		Waterville	94	39	65.2	1.08		Sheboygan	89	44	60.4	1.75	
Barboursville	......	......	......	5.63		Wenatchee (near)	90	39	64.5	0.36		Spooner	100	35	69.0	0.57	
Bedford	86	53	69.0	4.67		Westsound	86	38	60.2	2.14		Stevens Point	94	32	65.4	0.51	
Bigstone Gap	92	50	72.2	5.18		Wilbur	89	34	62.7	0.20		Sturgeon Bay Canal *[9]	89	43	59.5	......	
Birdsnest *[1]	88	58	74.4	0.65		*West Virginia.*						Two Rivers *[10]	84	48	62.2	......	
Blacksburg	88	47	67.8	4.48		Beckley	89	47	68.6	3.25		Valley Junction	94	31	65.0	1.32	
Bon Air	92	55	73.7	3.57		Beverly	92	44	68.6	6.45		Viroqua	92	44	66.6	1.58	
Burkes Garden	82	43	66.6	4.50		Bluefield	85	48	70.1	5.48		Watertown	92	39	65.5	1.61	
Callaville	92	48	73.6	1.48		Buckhannon *b*	92	45	70.2	4.30		Waukesha	91	42	65.2	1.21	
Christiansburg	......	......	......	8.87		Burlington	95	47	71.1	3.63		Wausau	94	36	67.6	1.81	
Clarksville	......	......	......	2.36		Cairo	96	42	70.5	5.15		Wausaukee	98	34	62.3	2.95	
Cliftonforge	98	51	71.5	4.23		Central	91	45	70.6	4.60		Westfield	94	40	66.8	1.50	
Columbia	......	......	......	8.20		Chapel	94	52	75.0	15.62		Whitehall	95	39	67.8	2.79	
Dale Enterprise	92	44	68.6	8.01		Charleston	......	......	......	7.13		*Wyoming.*					
Danville	......	......	......	2.70		Dayton	91	45	69.2	4.65		Alcova	104	36	71.0	T.	
Farmville	98	54	75.4	8.19		Eastbank	91	56	72.4	4.98		Basin	110	35	72.2	0.29	
Fontella	96	52	73.4	6.53		Elkhorn	90	50	70.9	4.03		Bedford	93	24	59.9	T.	
Fredericksburg	93	54	73.4	7.09		Fairmont	......	......	......	5.47		Bitter Creek	116	30	69.0	T.	
Freeling	85	48	70.2	5.22		Glenville	92	49	71.1	4.98		Buffalo	102	35	69.4	0.19	
Hampton	91	57	75.2	1.16		Grafton	90	45	70.4	5.40		Burlington	102	38	70.8	T.	
Hot Springs	87	45	67.1	4.46		Green Sulphur Springs	90	50	73.0	5.36		Carbon	99	33	65.6	0.12	
Lexington	89	55	71.1	7.49		Harpers Ferry	......	......	......	3.58		Centennial	82	34	57.0	0.57	
Manassas	92	52	72.6	5.92		Hinton *a*	......	......	......	6.22		Cody	102	34	70.0	0.27	
Marion	88	48	71.2	4.55		Huntington	93	51	73.6	4.49		Daniel	86	23	54.7	0.99	
Meadowdale	88	42	67.2	5.13		Lewisburg	91	48	70.2	2.96		Embar	103	36	68.9	0.90	
Petersburg	96	52	75.8	6.49		Marlinton	87	46	68.6	5.32		Evanston	88	31	59.0	0.30	
Radford	......	......	......	5.43		Martinsburg	93	50	71.6	3.63		Fort Laramie	101	41	72.0	1.31	
Rockymount	90	52	72.4	7.51		Morgantown	93	47	72.0	5.39		Fort Washakie	95	33	65.5	1.00	
Salem	91	52	72.2	4.20		New Martinsville	93	49	72.2	3.88		Fort Yellowstone	92	30	62.0	1.17	
Speers Ferry	......	......	......	5.11		Nuttallburg	87	49	70.4	6.53		Fourbear	86	28	59.1	1.20	
Spottsville	95	47	74.8	3.30		Oceana	94	52	73.0	8.69		Hyattville	100	32	68.2	0.02	
Stanardsville	92	51	70.1	5.87		Oldfields	98	50	71.4	4.77		Iron Mountain	92	36	65.2	1.08	
Staunton	94	50	72.2	5.66		Parsons	88	46	68.8	5.90		Laramie	91	34	61.5	0.35	
Stephens City	94	50	71.6	4.51		Philippi *a*	90	41	61.5	4.98		Lovell	105	33	70.4	0.17	
Sunbeam	92	49	74.5	4.12		Point Pleasant	93	51	74.2	5.81		Lusk	99	37	67.4	1.15	
Tobaccoville	......	49	......	4.05		Powellton	......	......	......	5.07		Parkman	99	32	67.0	0.45	
Warrenton	92	51	71.9	4.20		Princeton	86	50	70.2	9.00		Pinebluff	99	......	......	0.27	
Warsaw	93	53	74.2	3.50		Romney	97	48	71.4	4.84		Rawlins	93	33	64.1	0.11	
Woodstock	95	50	71.6	4.23		Rowlesburg	......	......	......	6.96		Saratoga	95	36	64.4	0.50	
Wytheville	88	48	70.0	3.88		South Side	90	55	74.0	2.49		Sheridan	98	34	66.9	0.18	
Washington.						Spencer	93	48	72.5	4.46		Southpass City	91	31	61.9	0.44	
Aberdeen	86	39	57.6	7.77		Terra Alta	84	50	68.6	7.78		Thayne	92	22	58.8	0.17	
Anacortes	......	......	......	1.86		Uppertract	94	45	70.1	4.17		Thermopolis	103	37	70.0	0.13	
Ashford	......	......	......	4.15		Wellsburg	88	50	69.1	4.65		Wheatland	100	41	73.6	0.43	
Bremerton	88	41	61.0	4.37		Weston *a*	......	......	......	6.21		*Cuba.*					
Bridgeport	100	35	69.8	0.20		Weston *b*	93	49	72.8	......		Aguacate	96	61	79.4	6.90	
Brinnon	......	......	......	4.67		Wheeling *a*	......	......	......	3.46		Anstralia	94	64	80.6	2.80	
Cedar Lake	......	......	......	7.12		Wheeling *b*	95	58	76.7	3.20		Banaguises	93	61	79.0	7.44	
Cedonia	85	36	61.8	0.39		Wiggins	88	54	71.4	......		Batabano	96	67	82.7	5.89	
Centerville	88	37	62.8	0.74		*Wisconsin.*						Caibarien	......	......	......	6.39	
Chehalis	90	42	64.2	2.67		Amherst	94	35	64.6	1.18		Camajuani	93	65	78.2	12.19	
Cheney	......	......	......	T.		Antigo	95[c]	35[c]	64.2[c]	2.31		Cardenas	96	69	82.0	5.94	
Clearwater	84	39	58.6	13.92		Ashland	......	......	......	1.37		Cruces	......	......	......	5.53	
Cle Elum	92	31	59.2	0.71		Barron	96	28	65.0	2.20		Gibara	94	67	79.7	2.89	
Colfax	97	34	65.0	0.27		Bayfield	92	41	62.6	3.60		Guabairo	......	......	......	6.07	
Colville	92	31	63.0	0.35		Brodhead	92	41	68.6	2.66		Guanajay	90	66	81.4	9.60	
Conconully	89	38	64.2	0.26		Butternut	93	30	61.6	1.16		Guantanamo	96	66	81.4	3.76	
Connell	......	......	......	0.11		Casco	91	36	62.6	3.41		Guines	95	65	82.7	7.83	
Coulee City	95	44	68.0	0.32		Citypoint	95	47	68.8	1.40		Holguin	92	68	78.6	4.72	
Coupeville	81	41	58.4	1.46		Delavan	93[d]	42[d]	67.8[d]	2.05		Limonar	......	......	......	10.07	
Crescent	93	35	64.0	0.17		Dodgeville	92	42	66.2	2.81		Manzanillo	95	75	84.9	5.95	
Dayton	95	42	66.8	0.15		Easton	94	37	62.0	1.52		Matanzas	94	63	79.3	8.25	
Ellensburg (near)	102	42	66.5	0.08		Eau Claire	97	44	68.2	1.86		Moron Trocha	95	66	81.1	8.37	
Grandmound	88	39	61.6	3.35		Florence	92	30	62.3	3.58		Nuevitas	95	72	83.2	1.77	
Granite Falls	......	......	......	5.96		Fond du Lac	93	40	66.2	1.25		Pinar del Rio	93	69	80.6	3.85	
Hooper	100	37	68.2	0.22		Grand River Locks	......	......	......	2.40		Sagua la Grande	96	60	79.9	13.49	
Issaquah	......	......	......	3.24		Grantsburg	97	34	64.7	1.35		San Cayetamo	95	71	82.2	7.66	
Lacenter	93	44	62.4	2.68		Hartford	94	37	66.1	1.24		Santa Clara	98	64	80.4	7.61	
Lakeside	93	47	69.6	0.65		Hartland	95	39	66.0	1.33		Santa Cruz del Sur	88	72	80.0	......	
Lind	101	40	69.6	0.29		Harvey	94	43	67.2	1.30		Soledad	93	61	79.4	5.26	
Loomis	94	43	69.0	......		Hayward	95	34	65.3	2.10		Union de Reyes	92	71	81.8	6.18	
Mayfield	92	36	60.6	3.99		Heafford	94	35	64.0	2.04		*Porto Rico.*					
Montecristo	84	38	59.6	10.92		Hillsboro	93	39[c]	65.2[c]	3.56		Adjuntas	91	57	75.0	18.92	
Mottinger Ranch	102	49	71.8	0.17		Knapp	94	35	64.7	2.46		Aguadilla	89	66	80.7	10.50	
Mount Pleasant	88	46	62.8	2.12		Koepenick *[1]	90	42	64.0	3.70		Arecibo	90	68	78.0	7.43	
Moxee Valley	95	37	66.3	0.35		Lancaster	92	46	67.1	1.53		Bayamon	97	65	79.0	7.92	
New Whatcom	77	39	58.0	3.97		Madison	87	46	67.7	3.20		Caguas	92	66	78.3	13.76	
Northport	98	33	63.9	1.02		Manitowoc	89	40	60.9	2.43		Canovanas	93	72	80.4	10.85	
Olga	76	42	57.4	2.47		Meadow Valley	98	32	65.6	0.95		Cidra	89	63	75.6	12.39	
Olympia	90	39	61.8	3.75		Medford	103	30	65.0	1.35		Coamo	93	66	79.2	12.32	
Pinehill	96	39	67.4	0.75		Menasha	......	......	......	1.53		Corozal	93	60	78.1	7.26	
Pomeroy	91	48	69.2	0.61		Neillsville	93	36	66.0	2.41		Fajardo	89	68	79.4	14.35	
Port Townsend	81	44	58.4	1.46		New Holstein	90	38	64.4	3.10		Hacienda Coloso	95	66	79.8	13.74	
Pullman	90	37	62.8	0.48		New London	96	36	65.8	1.47		Hacienda Perla	91	67	78.8	18.14	
Republic	94	31	62.8	1.43		Oconto	93	38	63.8	1.81		Humacao	91	67	79.8	22.83	
Ritzville	......	......	......	0.10		Osceola	98	33	65.4	0.90		Isabela	91	68	79.2	5.08	

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Temperature. (Fahrenheit.) Minimum.	Temperature. (Fahrenheit.) Mean.	Precipitation. Rain and melted snow.	Precipitation. Total depth of snow.
Porto Rico—Cont'd.	°	°	°	*Ins.*	*Ins.*
Juana Diaz	93	67	80.0	13.48	
La Isolina	90	65	76.2	10.74	
Lajas	95	67	80.0	16.30	
Manati	95	66	79.5	6.95	
Maunabo	87	73	80.8	15.03	
Mayaguez	92	68	79.8	14.03	
Ponce	91	66	79.5	16.68	
Port America	90	72	80.8	12.16	
Puerta de Tierra	93	68	81.0	7.90	
San German	92	56	74.6	15.74	
San Lorenzo	91	65	78.6	21.41	
Utuado	95	67	81.2	8.84	
Vieques	88	64	76.4	4.20	
Yanco	94	66	80.3	18.52	
Mexico.					
Ciudad P. Diaz	104	66	85.1	2.34	
Coatzacoalcos	102	59	82.6	1.07	
Leon de Aldamas	92	56	74.5	1.49	
Puebla *[1]	84	58	69.4	4.38	
Tampico	96	74	86.2	1.64	
Topolobampo *[1]	98	73	82.9	1.02	
Vera Cruz	93	71	83.5	2.02	
New Brunswick.					
St. John	78	43	57.7	5.12	
Nicaragua.					
Rivas	90	74	81.7	15.35	

Late reports for May, 1900.

Stations.	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
Alaska.					
Coal Harbor	57	24	40.6	2.24	0.8
Kenai	60	21	42.8	0.37	T.
Killisnoo	60	34	46.1	2.20	
Orca	61	28	43.7	13.70	
Skagway	65	30	47.8	0.12	
Wood Island	64	30	44.8	6.62	1.0
Arizona.					
Cochise *[1]	102	50	70.3	0.00	
Russellville	......	......	......	0.00	
Walnutgrove	......	......	......	0.04	
California.					
Agnews	89	42	63.2	0.51	
Craftonville	91	40	65.5	1.97	
Deweyville	98	45	68.7	0.23	
Kernville	......	......	......	0.90	
California—Cont'd.		°		*Ins.*	*Ins*
Mutah Flat	......	....	......	1.80	
San Miguel Island	76	38	54.6	0.44	
Snedden	......	......	......	1.40	
West Saticoy	......	....	......	0.31	
Colorado.					
Minneapolis	93	40	63.6	1.89	
Rangely	90	30	59.2	T.	
T. S. Ranch	86[d]	35	60.1	0.20	
Walden	83	22	47.8	0.92	
Illinois.					
Monmouth	89	32	63.2	2.93	
Kansas.					
Eureka Ranch	90	36	64.5	4.19	
Massachusetts.					
Amherst	90	21	55.1	4.01	
Michigan.					
Badaxe	84	24	57.2	2.54	
Minnesota.					
Le Roy	......	29	.....	2.44	
Mississippi.					
Batesville	89	41	69.1	3.70	
Corinth	89	45	70.0	5.22	
Hernando	89	44	70.3	2.44	
Pontotoc	88	42	69.7	4.18	
Nebraska.					
Crete	86	33	64.4	5.21	
Merriman	......	......	......	T.	
New Jersey.					
Vineland	97	35	63.0	2.97	
North Carolina.					
Selma	96	40	70.9	....	
Ohio.					
Warsaw	92	28	59.8	2.11	
Texas.					
Anson	.....	......	......	5.10	
College Station	89	57	72.6	12.28	
Utah.					
Snowville	84	33	55.8	0.53	
Washington.					
Vashon	73	39	54.6	4.27	
Porto Rico.					
Cayey	89	64	76.2	12.10	
Juana Diaz	92	69[d]	80.8	4.96	
Mexico.					
Guanajuato	93	51	71.2	1.51	
Nicaragua.					
Rivas	95	75	84.0	12.02	

EXPLANATION OF SIGNS.

* Extremes of temperature from observed readings of dry thermometer.

A numeral following the name of a station indicates the hours of observation from which the mean temperature was obtained, thus:

[1] Mean of 7 a. m. + 2 p. m. + 9 p. m. + 9 p. m. ÷ 4.
[2] Mean of 8 a. m. + 8 p. m. ÷ 2.
[3] Mean of 7 a. m. + 7 p. m. ÷ 2.
[4] Mean of 6 a. m. + 6 p. m. ÷ 2.
[5] Mean of 7 a. m. + 2 p. m. ÷ 2.
[6] Mean of readings at various hours reduced to true daily mean by special tables.
[7] Mean from hourly readings of thermograph.
[8] Mean of sunrise and noon.
[10] Mean of sunrise, noon, sunset, and midnight.

The absence of a numeral indicates that the mean temperature has been obtained from daily readings of the maximum and minimum thermometers.

An italic letter following the name of a station, as "Livingston *a*," "Livingston *b*," indicates that two or more observers, as the case may be, are reporting from the same station. A small roman letter following the name of a station, or in figure columns, indicates the number of days missing from the record; for instance "n" denotes 14 days missing.

No note is made of breaks in the continuity of temperature records when the same do not exceed two days. All known breaks, of whatever duration, in the precipitation record receive appropriate notice.

CORRECTIONS.

May, 1900, Iowa, Fayette, make total precipitation 2.06 instead of 1.95 Oklahoma, Beaver, make total precipitation 0.80 instead of 1.00.

NOTE.—The following change has been made in the names of stations: Ohio, Vanceburg changed to Green.

In this REVIEW, page 214, column 3, table, for November, upper subbasin, for 0.39 read 0.89.

For May, Gamboa, for 0.58 read 0.55. For June, Bohio, insert 0.32; for Gamboa, insert 0.35; for upper subbasin, insert 0.41; for intermediate subbasin, insert 0.22; for lower subbasin insert 0.27.

TABLE III.—*Mean temperature for each hour of seventy-fifth meridian time, June, 1900.*

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Mean.
Bismarck, N Dak....	62.9	61.2	59.7	58.9	57.4	56.2	57.0	59.8	63.2	66.2	69.6	72.0	73.7	75.1	76.2	77.7	78.5	78.6	78.2	77.2	74.3	70.4	66.9	64.2	68.1
Boston, Mass	63.3	62.3	61.7	61.0	60.4	61.2	63.6	67.2	69.7	71.6	72.8	73.2	74.3	73.9	74.2	74.4	73.8	72.6	70.6	68.7	67.3	66.2	65.2	64.2	68.1
Buffalo, N. Y.........	62.5	61.8	61.3	60.3	60.0	60.7	62.4	64.5	66.3	67.6	68.8	69.9	71.0	71.5	72.0	72.0	72.2	71.5	70.5	69.1	67.1	65.9	64.5	63.1	66.5
Cedar City, Utah....	66.8	65.6	64.7	64.0	62.8	62.1	61.5	61.0	63.6	69.2	73.0	75.9	77.6	79.4	79.9	81.1	81.4	80.9	80.5	79.7	76.8	72.1	70.4	68.3	71.6
Chicago, Ill...........	62.6	62.4	62.2	61.4	60.9	60.6	61.2	62.7	63.4	64.0	64.5	64.8	65.6	66.2	66.1	65.6	65.1	64.8	64.0	63.4	62.8	62.5	62.5	62.6	63.4
Cincinnati, Ohio....	69.6	68.8	68.0	67.3	66.6	66.2	66.8	68.1	70.1	72.3	74.4	76.3	77.6	78.6	80.0	79.4	79.4	79.2	78.4	76.9	74.7	73.2	71.8	70.6	73.1
Cleveland, Ohio	63 8	63.2	62.4	61.5	61.3	61.5	62.8	64.8	66.3	67.6	68.4	68.6	69.1	69.5	69.8	70.0	70.4	70.3	69.7	68.6	67.2	66.2	65.1	64.5	66.4
Detroit, Mich........	61.7	61.0	60.4	59.9	59.5	59.7	61.3	64.2	66.0	68.3	70 0	71.3	72.2	72.7	73.4	73.9	72.9	72.4	71.7	69.8	67.8	65.5	63.8	62.4	66.7
Dodge, Kans..........	69.2	68.3	66.5	65.8	65.0	63.8	63.2	65.2	69.1	72.3	76.0	78.8	81.3	82.6	84.2	85.1	85.6	84.8	83.8	81.6	78.3	74.2	71.8	70 1	74.4
Eastport, Me	50.5	50.2	49.8	49.7	50.3	51.8	53.3	56.1	57.4	58.8	60.6	61.0	61.1	62.0	61.5	61.0	59.5	58.4	57.2	55.8	53.9	52.8	51.8	51.5	55 7
Galveston, Tex.......	80.0	80.0	79.8	79.2	78.9	78.6	78.6	79.9	81.0	82.5	83.2	83.5	83.8	83.9	84.1	84.5	84.2	83.9	83.2	82.7	81.4	81.0	80.6	80.4	81.6
Havre, Mont..........	63.8	61.9	60.0	58.4	57.3	56.2	55.9	57.5	62.3	65.6	69.7	72.3	74.0	75.9	77.5	79.4	79.5	79.7	78.9	77.9	76.1	72.8	68.1	65.5	68.6
Independence, Cal..	75.6	72.7	71.0	69.6	68.4	67.1	65.3	65.0	64.9	67 3	71.8	75.9	79.1	82 0	84.5	85.7	86.5	86.8	86.5	86.2	84.4	81.6	78.8	77.6	76.4
Kalispell, Mont	58.1	56.4	54.7	53.5	51.7	50.7	49.5	50.3	53.1	56.5	60.3	63.8	66.6	68.0	69.7	71.0	71.6	71.7	71.9	70.9	70.4	67.9	64.1	60.1	63.2
Kansas City, Mo.....	70.3	69.4	68.5	68.0	67.4	66.4	66.0	67.7	69.6	72.2	74.6	76.6	78.4	79.5	80.5	81.3	81.7	81.6	80.7	79.3	76.3	74.4	72.9	71.4	73.9
Key West, Fla........	79.0	79.0	78.8	78.9	78.5	78.6	79.7	80.9	82.4	82.5	83.3	83.8	83.4	83.8	83.8	83.1	82.8	82.1	81.2	80.4	80.0	79.9	79.8	79.4	81.1
Marquette, Mich ...	56.0	55.9	55.8	55.2	54.5	54.5	55.4	57.7	58.9	59.8	61.2	62.1	62.5	63.3	63.5	63.8	63.9	63.9	62.8	61.6	59.8	58.3	57.2	56.5	59.3
Memphis, Tenn *	71.8	71.4	70.7	70.2	69 8	69.6	69.9	71.7	73.2	74.6	75.8	77.7	79 2	80.4	81.0	81.6	81.8	80.6	79.5	77.8	75.8	74.9	74.1	73.3	75.3
Mt. Tamalpais, Cal..	59.6	59.8	59.5	58.9	58.9	58.2	58.4	57.9	58.0	58.7	58.9	58.8	60.3	61.7	63 8	65.3	66.1	66.5	65.7	64.6	63.9	62.5	61.0	60.3	61 1
New Orleans, La.....	76.2	75.6	75.3	75.3	75.2	75.3	76.0	77.3	80.1	81.3	82.4	83.3	83.8	83.2	83.2	82.6	82.4	82.0	81.2	80.4	78.7	78.0	77.2	76.8	79.3
New York, N. Y.....	66.8	66.1	65.9	65.2	64.9	64.8	65.5	67.1	68.9	72.0	74.1	75.6	76.3	77.3	77.0	77.2	76.8	74.9	72.4	70.5	69.2	68.6	67.6	67.0	70.5
Philadelphia, Pa.....	67.0	66.4	65.9	65.6	65.2	65.5	67.1	69.4	71.8	74.8	76.2	78.2	79.3	80.5	80.8	80.3	78.8	77.3	75.3	73.6	70.9	69.8	68.8	67.8	72.3
Pittsburg, Pa.........	67.7	66.8	65.7	65.2	64.6	64.2	65.3	67.6	70.4	72.5	74.9	76.7	78.3	78.2	80.0	80.1	79.4	78.1	75.0	74.2	72.9	71.5	69.8	68.2	72.0
Portland, Oreg.......	62.9	61.8	60.4	58.9	57.8	57.0	55.9	55.4	55.3	56.9	58.5	60.2	62.5	64.1	66.2	67.6	69.2	70.1	70.8	70.5	70.0	68 4	66.4	64.2	63.0
St. Louis, Mo..........	71.5	70.5	69.6	68.8	68.2	67.4	67.3	69.0	70.6	72.9	75.1	77.2	78.7	79.7	80.4	80.8	81.0	80.5	79.3	77.5	76.0	74.5	73.4	72.4	74.3
St. Paul, Minn........	65.5	64.4	62.8	61.7	60.6	59.3	58.8	60.9	63.9	67.3	70.4	72.7	74.8	76.2	77.4	77.7	78.3	77.9	77.5	76.8	74.8	72.1	69.7	68.0	69.6
Salt Lake City, Utah.	70.7	69.6	67.5	66.3	65.9	64.4	62.6	64.4	66.5	70.8	74.8	77.5	80.2	81.5	84.0	84.7	85.1	84.0	84.2	83.6	82.1	77.6	75.2	73.2	74.8
San Diego, Cal........	62.9	62.6	62.1	61.9	61.8	61.6	61.2	60.6	60.7	61.5	62.6	64.0	65.7	66.4	67.3	67.2	67.1	66.9	66.6	65.8	65.4	64.6	63.8	63.3	63.9
San Francisco, Cal...	54.4	53.6	53.1	52.7	52.4	52.1	52.0	53.1	52.5	54.0	55.8	56.8	58.9	60.5	62.1	62.2	62.0	61.5	60.2	59.6	58.3	57.0	55.8	55.1	56.5
Santa Fe, N. Mex ...	63.3	62.0	60.6	59 1	58.8	58.0	56.9	59.9	64.1	66.8	69.6	71.7	73.7	74.7	75.6	77.1	76.6	75.7	74.7	73.4	71.0	67.8	65.8	64.6	67.6
Savannah, Ga.........	73.4	73.1	72.7	72 6	72.4	72.4	73.9	76.1	78.1	79.9	81.7	82.6	83.6	83.7	82.9	82.4	80.7	79.1	77.8	76.6	75.6	75.3	74.8	74.3	77.3
Washington, D. C....	67.4	67.0	65.8	64.9	64.3	64.9	67.0	69.5	71.6	73.5	75.4	77.2	78.5	79.6	79.2	78.9	78.2	76.7	75.0	73.2	71.5	70.2	69.0	68.3	72.0
West Indies.																									
Basseterre, St. Kitts.	78.9	78.9	78.6	78.7	78.5	79.4	80.7	81.9	82.8	83.4	83.4	83 9	83.2	82.7	82.4	82.1	81.1	80.4	80.1	80.0	79.7	79.4	79.3	79.0	80.8
Bridgetown, Bar.....	77.2	77.2	77.1	76.9	77.0	79.1	80.9	82.0	83.2	83.6	84.2	84.4	83.9	83.5	82.8	81.9	80.5	79.2	78.9	78.5	78.1	77.8	77.5	77.3	80.1
Cienfuegos, Cuba ...	74.8	73 8	73.2	73.1	72 8	72.7	75.6	79.5	81.9	83.8	85.6	87.0	87.2	86.8	85.4	84.3	83.4	82.1	80.5	79.5	78.2	77.4	76.2	75.7	79.6
Havana, Cuba........	76.0	75 2	74.8	74.5	74.1	74.0	75.3	78.1	80.7	82.4	83.7	84.1	83.6	83.4	83.5	82.9	81.5	81.2	80.0	78.9	78.2	77.7	77.1	76.4	79.1
Kingston, Jamaica..	74.2	73.9	73.8	73.7	73.5	72.9	75.1	80.0	83.1	85.2	85.9	86.4	85.4	84.3	83.5	83.0	82.1	81.3	79.9	78.4	77.2	76.2	75.6	74.9	79.1
Port of Spain, Trin..	74.6	74.2	74.2	71.7	73.8	74.7	77.5	80.2	82.6	81.7	82.3	81.5	81.5	80.9	81.1	81.1	80.6	79.1	78.2	77.4	76 7	76.4	75.7	75.3	78.1
P. Principe, Cuba ...	72.8	72.2	71.8	71.4	71.0	70.8	72 2	77.4	79.2	81.7	84 0	86.3	87.7	88.7	87.8	85.4	83.1	81.2	78.5	76.2	75.0	74.5	74.0	73.8	78.2
Roseau, Dominica ..	76.9	76.5	76.2	75.8	76.1	77.3	80.4	82.0	83.0	83.9	84.8	85 1	84.9	84.6	83.6	82.9	81.5	79.8	78.8	78.4	78.0	77.7	77.1	77.3	80.1
San Juan, P. R.......	76.0	75.9	75.6	75.4	75.2	76.0	78.0	80.5	81.8	82.3	83.0	83.3	83.2	82.9	82.1	80.9	80.1	79.4	78.8	78.4	77.6	77 1	76.8	76.7	79.0
Santiago de Cuba...	76.1	75.6	75.2	74.7	74.4	74.9	78.2	80.7	84.5	86.4	87.7	88.3	88.9	87.9	86.2	85.0	83.5	82.0	80.7	79.8	79.0	78 5	77.5	77.1	81.0
Santo Domingo, S. D.	74.6	74.2	73.8	73.6	73.5	73.4	75.3	78.0	79.9	81.4	81.9	82.6	82.6	82.5	82.3	81.8	81.2	80.2	79.4	78.4	77.3	76 4	75.8	75.1	78.1
Willemstad, Curaçao	79.6	79.4	79.3	79.0	79.0	79.5	81.3	82.8	83.7	84.3	85.0	85.5	86.5	86.6	86.0	85.0	83.4	82.1	81.1	81.0	80.7	80.3	80.2	80.0	82.1

* Record for 25 days.

TABLE IV.—*Mean pressure for each hour of seventy-fifth meridian time, June, 1900.*

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Mean.
Bismarck, N. Dak....	28.151	.152	.151	.155	.165	.174	.178	.182	.186	.184	.178	.174	.166	.155	.142	.133	.119	.109	.101	.100	.103	.116	.125	.133	.147
Boston, Mass.........	29.784	.780	.780	.782	.793	.807	.811	.813	.810	.807	.801	.791	.779	.772	.766	.760	.760	.762	.767	.768	.781	.783	.783	.783	.784
Buffalo, N. Y.........	29.127	.125	.126	.128	.135	.144	.152	.161	.157	.154	.154	.148	.137	.128	.119	.111	.105	.105	.108	.111	.124	.126	.128	.131	.131
Cedar City, Utah....	24.266	.265	.262	.262	.259	.262	.268	.276	.288	.296	.299	.295	.293	.283	.271	.258	.250	.238	.227	.223	.227	.235	.247	.257	.263
Chicago, Ill..........	29.080	.080	.079	.080	.085	.091	.098	.107	.111	.113	.115	.116	.111	.105	.093	.087	.080	.076	.074	.078	.076	.082	.088	.090	.091
Cincinnati, Ohio.....	29.285	.285	.285	.286	.296	.305	.315	.318	.320	.318	.313	.308	.299	.285	.270	.262	.253	.250	.255	.260	.280	.286	.288	.289	.288
Cleveland, Ohio.....	29.144	.142	.143	.150	.157	.163	.169	.174	.173	.171	.169	.163	.154	.143	.133	.127	.123	.125	.131	.133	.143	.148	.150	.149	.149
Detroit, Mich.........	29.174	.173	.168	.171	.177	.183	.189	.194	.193	.194	.194	.193	.184	.171	.165	.154	.152	.149	.149	.154	.163	.175	.178	.178	.174
Dodge, Kans..........	27.347	.347	.350	.348	.351	.355	.363	.367	.374	.378	.374	.370	.362	.350	.334	.319	.306	.295	.291	.301	.310	.328	.343	.347	.342
Eastport, Me	29.818	.813	.811	.813	.817	.820	.827	.832	.827	.824	.820	.814	.805	.795	.788	.782	.783	.786	.793	.803	.811	.813	.816	.812	.809
Galveston, Tex.......	29.813	.808	.804	.805	.808	.814	.822	.830	.843	.846	.848	.847	.837	.829	.819	.807	.795	.783	.781	.784	.793	.805	.815	.817	.815
Havre, Mont..........	27.255	.257	.258	.258	.261	.268	.272	.279	.282	.283	.277	.272	.263	.251	.236	.223	.217	.210	.205	.201	.211	.215	.232	.243	.247
Independence, Cal..	25.902	.906	.910	.911	.912	.914	.918	.926	.939	.952	.953	.950	.948	.936	.919	.905	.888	.873	.862	.851	.818	.852	.869	.886	.905
Kalispell, Mont	26 860	.862	.861	.862	.866	.869	.876	.884	.895	.894	.891	.883	.8¨4	.863	.851	.840	.831	.822	.815	.811	.811	.818	.834	.851	855
Kansas City, Mo.....	28.920	.920	.913	.911	.917	.925	.936	.943	.952	.957	.955	953	.943	.936	.923	.911	.900	.890	.883	.886	.896	.901	.916	.914	.921
Key West, Fla........	29.959	.950	.943	.940	.941	.945	.954	.967	.976	.977	.978	.975	.966	.956	.944	.933	.922	.917	.920	.941	.945	.954	.959	.959	.951
Marquette, Mich ...	29.162	.164	.161	.165	.169	.172	.182	.188	.193	.190	.190	.193	.185	.182	.171	.164	.161	.154	.156	.155	.160	.163	.163	.165	.171
Memphis, Tenn......	29.481	.481	479	.479	.483	.488	.495	.502	.510	.514	.516	.515	.507	.498	.487	.476	.465	.459	.458	.461	.463	.472	.479	.484	.485
Mt. Tamalpais, Cal .	27.505	.503	.497	.493	.487	.483	.483	.485	.495	.505	.517	.524	.528	.534	.536	.533	.525	.517	.508	.501	.492	.492	.493	.503	.506
New Orleans, La.....	29.841	.838	.832	.828	.837	.843	.855	.866	.875	.875	.877	.873	.864	.856	.847	.834	.828	.819	.822	.823	.829	.835	.844	.847	.845
New York, N. Y.....	29.622	.619	.619	.622	.641	.638	.647	.654	.654	.652	.646	.637	.625	.615	.605	.598	.592	.594	.598	.604	.617	.621	.625	.625	.623
Philadelphia, Pa.....	29.840	.838	.837	.836	.845	.853	.861	.867	.866	.865	.861	.853	.841	.828	.818	.812	.809	.810	.817	.828	.837	.842	.843	.841	.839
Pittsburg, Pa.........	29.061	.059	.059	.060	.067	.077	.086	.090	.087	.086	.077	.070	.055	.043	.031	.023	.019	.022	.027	.034	.046	.058	.063	.064	.057
Portland, Oreg.. ...	29.821	.826	.830	.834	.838	.840	.840	.845	.851	.853	.857	.856	.851	.845	.835	.829	.820	.812	.804	.799	.795	.7 7	.806	.816	.829
St. Louis, Mo.........	29.304	.302	.296	.297	.302	.311	.320	.328	.335	.334	.335	.330	.322	.311	.302	.293	.282	.272	.281	.285	.291	.301	.307	.309	.306
St. Paul, Minn........	29.042	.042	.046	.047	.051	.060	.068	.078	.078	.076	.070	.068	.056	.046	.035	.027	.019	.009	.001	.999	.004	.017	.030	.038	.042
Salt Lake City, Utah.	25.542	.543	.544	.548	.551	.557	.565	.575	.586	.591	.596	.595	.593	.585	.574	.559	.545	.534	.524	.518	.517	.520	.527	.537	.555
San Diego, Cal.......	29.817	.816	.807	.799	.792	.790	.788	.797	.804	.813	.821	.823	.825	.825	.821	.814	.809	.803	.796	.793	.793	.798	.803	.812	.807
San Francisco, Cal...	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Santa Fe, N. Mex ...	23.325	.328	.325	.324	.322	.325	.332	.337	.346	.352	.350	.346	.337	.325	.308	.295	.282	.278	.273	.278	.284	.298	.313	.321	.317
Savannah, Ga.........	29.922	.915	.911	.911	.916	.926	.937	.947	.955	.955	.951	.942	.930	.915	.900	.896	.893	.892	.900	.907	.913	.922	.927	.925	.921
Washington, D. C....	29.847	.845	.846	.846	.852	.863	.872	.880	.881	.881	.877	.868	.858	.847	.835	.828	.821	.822	.825	.827	.838	.844	.848	.849	.850
West Indies.																									
Basseterre, St. Kitts.	29.957	.948	.944	.945	.951	.960	.975	.983	.987	.986	.981	.969	.957	.946	.937	.933	.940	.950	.963	.977	.985	.988	.981	.970	.963
Bridgetown, Bar....	29.930	.924	.926	.926	.934	.944	.954	.961	.963	.959	.951	.939	.925	.912	.905	.906	.912	.923	.936	.949	.957	.961	.936	.942	.937
Cienfuegos, Cuba...	29.889	.877	.869	.870	.874	.884	.899	.907	.909	.908	.905	.894	.882	.868	.854	.849	.850	.857	.875	.889	.900	.905	.904	.899	884
Havana, Cuba........	29.901	.891	.885	.879	.884	.891	.905	.916	.919	.923	.922	.914	.903	.890	.876	.869	.866	.871	.881	.896	.905	.911	.916	.911	.897
Kingston, Jamaica..	29.634	.618	.610	.606	.607	.614	.630	.638	.640	.637	.629	.617	.601	.590	.577	.570	.570	.576	.596	.614	.630	.641	.651	.648	.614
Port of Spain, Trin..	29.893	.886	.884	.889	.897	.909	.921	.927	.928	.923	.914	.897	.880	.864	.851	.850	.858	.868	.885	.902	.914	.923	.919	.907	.895
P. Principe, Cuba ...	29.608	.597	.589	.588	.592	.602	.615	.621	.625	.624	.623	.612	.600	.583	.572	.566	.572	.589	.606	.615	.622	.629	.626	.621	.604
Roseau, Dominica ..	29.935	.930	.930	.932	.940	.950	.956	.965	.967	.963	.954	.944	.932	.920	.912	.911	.917	.930	.942	.957	.963	.965	.961	.948	.943
San Juan, P. R......	29.893	.886	.885	.887	893	.903	.910	.914	.914	.912	.908	.898	.886	.875	.867	.868	.873	.885	.898	.909	.916	.922	.918	.906	.897
Santiago de Cuba...	29.844	.834	.824	.826	.829	.839	.850	.851	.855	.853	.844	.837	.838	.806	.799	.797	.799	.811	.827	.845	.857	.865	.864	.855	.835
Santo Domingo, S. D.	29.924	.915	.908	.905	.911	.923	.937	.945	.952	.951	.944	.934	.922	.910	.900	.887	.891	.902	.916	.931	.941	.951	.948	.938	.924
Willemstad, Curaçao	29.812	.804	.799	.800	.806	.821	.830	.835	.836	.831	.816	.798	.768	.746	.727	.724	.733	.752	.783	.805	.824	.836	.836	.827	.798

TABLE V.—*Average wind movement for each hour of seventy-fifth meridian time, June, 1900.*

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
Abilene, Tex	7.3	6.6	6.1	5.2	5.5	5.5	5.6	6.5	8.1	9.2	9.1	9.7	10.1	10.2	9.9	9.7	9.6	9.6	9.6	9.6	8.2	7.5	7.2	7.1	8.0
Albany, N. Y	5.1	5.3	5.6	5.1	5.3	5.7	6.4	7.7	8.2	8.5	9.0	9.8	9.3	9.4	9.7	9.5	9.0	8.8	8.0	7.5	6.6	7.0	6.3	6.3	7.4
Alpena, Mich	6.1	6.5	6.6	6.3	6.3	5.9	6.8	7.8	9.3	9.8	11.1	12.1	13.1	13.1	13.1	12.9	12.4	11.1	9.6	8.1	6.9	6.4	6.2	6.4	8.9
Amarillo, Tex	13.3	13.1	11.6	11.5	11.6	11.1	9.7	9.4	9.1	10.2	10.1	9.9	11.0	10.5	11.1	10.5	11.0	11.7	11.3	11.5	10.9	10.8	12.7	13.2	11.1
Atlanta, Ga	7.3	7.0	6.8	6.9	7.1	7.2	7.0	6.8	6.9	7.4	8.0	8.5	8.9	9.6	9.3	9.5	9.0	8.3	7.4	6.9	7.5	7.7	8.4	7.7	7.8
Atlantic City, N. J	8.8	8.4	8.7	9.1	9.6	9.1	9.3	10.9	11.4	11.8	11.9	12.2	12.9	12.6	13.3	12.7	11.6	11.1	9.9	9.9	9.7	10.0	9.1	9.1	10.6
Augusta, Ga	4.3	4.4	3.9	3.7	4.1	3.3	3.5	4.6	5.5	6.4	7.1	7.5	8.5	8.7	8.6	8.8	8.7	7.6	6.6	5.2	5.4	5.4	4.9	4.6	5.9
Baker City, Oreg	3.5	3.7	3.6	3.9	4.5	4.5	5.5	5.3	4.8	3.7	3.1	3.8	4.3	5.0	5.9	6.3	7.0	7.6	7.7	7.9	8.3	6.8	5.4	3.5	5.2
Baltimore, Md	3.1	3.4	3.4	3.4	3.5	3.9	4.0	5.0	5.8	6.3	6.6	6.9	7.2	7.1	7.1	7.3	7.3	6.5	5.5	4.8	4.0	4.2	3.8	3.9	5.2
Bismarck, N. Dak	7.5	7.5	7.5	6.9	7.0	7.4	7.7	8.7	9.7	11.5	12.8	14.0	14.9	15.3	15.4	15.2	15.7	15.1	14.2	13.3	11.7	10.1	10.4	9.2	11.2
Block Island, R. I	13.6	13.6	13.8	13.7	14.0	15.1	15.5	15.4	15.6	16.2	16.3	16.9	17.8	18.3	17.7	18.0	17.7	17.1	15.6	15.5	14.6	14.3	15.0	14.7	15.7
Boise, Idaho	3.6	3.7	3.2	3.2	2.6	2.3	2.4	2.4	2.0	2.7	3.6	4.7	5.9	6.2	6.5	6.9	7.0	6.8	6.5	6.6	5.5	5.0	4.3	3.4	4.4
Boston, Mass	9.7	9.7	10.0	10.2	9.8	9.7	10.1	10.5	11.6	11.9	12.7	13.8	14.6	15.1	14.7	13.7	13.4	12.7	11.4	10.5	10.6	10.1	9.8	9.5	11.5
Buffalo, N. Y	10.7	10.2	10.2	9.9	10.4	10.1	9.6	9.2	10.6	12.0	12.8	13.9	14.1	14.1	13.8	13.6	13.3	13.0	12.3	10.7	11.1	11.9	11.6	11.0	11.7
Cairo, Ill	5.7	5.6	5.8	5.7	5.6	5.7	6.0	6.5	6.7	6.2	7.1	7.1	6.7	7.5	8.0	7.7	8.0	7.7	7.3	6.8	6.2	6.5	6.3	5.7	6.6
Cape Henry, Va	11.8	11.5	11.4	11.5	11.8	11.7	12.0	13.5	13.8	13.2	13.0	13.7	13.5	13.4	13.0	13.2	13.9	12.7	11.7	11.2	10.6	10.5	11.2	11.7	12.3
Carson City, Nev	7.9	6.4	4.9	4.1	3.8	3.9	3.6	3.5	2.7	2.7	3.5	3.8	4.6	6.5	8.1	8.4	10.4	12.0	12.3	13.2	13.1	12.1	9.3	7.8	7.0
Cedar City, Utah	8.8	9.5	9.1	9.1	9.2	9.5	9.7	9.7	8.7	5.8	3.1	4.9	6.4	7.0	8.3	8.6	8.9	8.6	8.2	7.5	7.0	5.4	5.1	7.2	7.7
Charleston, S. C	9.2	9.1	9.0	8.6	7.8	7.6	8.6	9.4	10.1	11.2	11.1	11.5	13.0	14.4	15.0	14.1	13.9	13.1	12.5	11.3	10.7	10.4	10.9	10.0	10.9
Charlotte, N. C	5.8	5.5	5.7	5.3	4.6	4.8	5.1	6.3	6.9	6.9	7.4	7.4	7.2	7.1	7.7	7.8	7.6	6.7	5.5	5.3	5.2	5.7	6.0	6.3	6.2
Chattanooga, Tenn	4.4	3.5	3.8	3.8	3.4	3.3	3.5	4.5	5.5	6.6	6.7	7.2	8.1	8.3	8.1	7.9	7.2	7.8	6.1	5.3	4.3	4.0	3.8	4.1	5.5
Cheyenne, Wyo	8.1	8.0	7.3	6.9	7.1	7.1	6.3	6.4	7.6	9.0	10.6	11.1	10.9	11.1	12.3	12.0	11.7	12.5	12.7	11.8	10.8	8.9	9.1	8.5	9.5
Chicago, Ill	14.2	14.8	14.5	13.7	13.7	14.1	14.1	13.5	14.4	14.1	14.2	13.9	14.8	15.0	14.9	15.5	15.8	15.8	15.1	14.4	14.3	14.5	15.0	14.6	14.5
Cincinnati, Ohio	5.4	5.5	5.6	5.1	5.2	4.9	5.1	6.4	7.1	7.9	7.8	8.0	9.3	8.9	9.2	9.5	9.5	9.4	9.0	7.6	6.5	6.4	5.6	5.1	7.1
Cleveland, Ohio	11.4	11.6	11.2	11.0	11.2	11.4	10.9	11.2	11.3	12.1	13.3	14.4	14.6	14.8	15.0	15.7	15.3	14.1	13.2	13.0	11.5	11.5	11.3	11.3	12.6
Columbia, Mo	5.5	5.8	6.4	6.4	5.8	6.1	5.8	6.0	7.1	7.6	6.9	6.9	7.4	7.4	8.2	8.3	7.9	7.4	6.3	5.2	5.1	5.5	5.2	5.9	6.5
Columbus, Ohio	5.7	5.5	5.6	5.5	5.3	5.4	5.4	6.3	7.4	8.2	8.8	8.8	9.6	10.0	9.9	9.8	9.6	9.7	9.2	8.3	7.6	7.5	6.7	6.2	7.6
Concordia, Kans	6.2	5.7	5.7	5.1	4.3	4.0	3.7	4.6	6.2	6.8	8.2	8.3	8.5	8.5	8.5	8.5	8.7	8.8	8.3	7.4	6.0	5.6	5.7	5.9	6.6
Corpus Christi, Tex	10.6	9.6	8.7	8.3	7.6	7.2	7.5	6.8	8.2	9.9	9.5	10.1	11.9	12.8	14.2	16.2	16.2	16.3	16.8	16.2	15.0	14.5	12.9	11.4	11.6
Davenport, Iowa	6.3	6.7	6.2	6.0	6.0	5.5	6.4	7.2	8.1	8.6	8.8	8.9	9.6	9.9	9.6	9.5	8.9	8.5	8.3	6.9	5.5	6.1	5.9	6.2	7.5
Denver, Colo	7.7	7.1	7.8	7.2	7.3	7.0	7.1	6.8	6.7	6.0	5.7	6.4	7.2	8.3	9.2	9.1	10.1	11.1	10.8	11.6	11.4	9.9	8.1	7.2	8.2
Des Moines, Iowa	5.4	5.3	5.0	5.4	6.1	5.8	6.3	6.7	7.3	8.5	9.9	10.0	10.5	10.5	10.0	10.5	9.9	9.6	9.8	8.6	6.6	5.4	5.1	5.8	7.7
Detroit, Mich	6.7	7.0	7.2	7.0	6.7	6.7	6.9	7.4	8.0	8.5	9.4	10.0	10.7	11.3	11.6	11.8	11.3	10.1	8.8	8.0	6.9	7.3	7.1	6.9	8.5
Dodge, Kans	8.4	8.0	7.6	7.1	6.7	6.0	6.2	6.7	8.4	10.1	10.8	11.5	11.7	11.7	11.7	11.5	11.8	12.2	12.1	10.5	8.1	8.7	8.8	7.5	9.3
Dubuque, Iowa	4.8	4.6	4.8	4.7	4.3	4.7	5.1	6.2	7.5	8.0	8.5	8.9	9.4	10.4	9.7	9.9	9.4	9.5	8.5	7.3	6.0	5.1	4.8	5.0	7.0
Duluth, Minn	5.5	6.1	7.1	7.2	7.3	6.8	6.7	7.5	8.4	8.6	9.3	10.0	11.0	11.1	10.9	10.2	9.7	9.3	8.3	7.2	6.9	6.4	6.5	6.5	8.1
Eastport, Me	6.6	6.3	6.3	6.1	6.2	6.3	7.2	8.4	8.8	9.6	9.9	10.5	10.3	11.3	11.7	11.6	9.9	8.0	7.4	6.3	6.4	6.7	7.0	6.9	8.2
Elkins, W. Va	1.9	1.8	1.9	2.0	2.0	2.1	2.3	2.7	3.8	4.3	5.3	5.8	6.0	6.1	6.2	6.3	6.3	5.6	4.5	3.4	2.8	2.5	2.2	1.9	3.7
El Paso, Tex	11.6	11.2	10.8	11.7	11.3	10.6	9.4	7.9	7.4	8.4	8.3	8.4	8.9	9.3	9.0	8.7	9.6	11.8	13.7	13.5	12.7	10.9	11.7	12.0	10.4
Erie, Pa	8.0	8.6	9.0	8.9	9.2	8.9	8.5	9.3	9.9	10.2	10.7	10.7	10.3	10.4	10.5	10.3	10.3	9.7	8.7	8.4	8.3	8.2	7.8	7.7	9.3
Escanaba, Mich	6.5	6.8	7.7	7.3	6.7	6.8	7.5	8.6	8.8	8.9	9.2	10.3	10.9	12.0	10.9	10.8	10.6	10.7	9.4	8.5	8.3	7.6	7.2	6.8	8.7
Eureka, Cal	6.3	5.5	4.9	4.6	4.8	4.8	4.7	4.2	4.3	4.2	4.9	6.4	7.8	9.3	10.5	11.7	11.7	11.4	10.9	10.0	9.7	8.8	8.1	6.8	7.3
Evansville, Ind	5.8	5.8	5.9	6.1	6.0	6.3	6.3	7.5	7.2	7.1	7.4	7.6	7.4	7.7	8.1	8.7	8.4	7.9	7.5	6.6	6.5	5.9	7.1	6.5	7.0
Fort Smith, Ark	3.9	4.1	4.7	4.6	4.0	4.6	5.4	5.0	5.2	5.8	5.9	6.1	6.8	6.9	6.6	6.6	7.1	7.1	7.2	6.0	5.2	4.9	4.6	3.7	5.5
Fort Worth, Tex	9.8	9.9	9.3	8.0	7.8	6.8	7.3	7.2	8.6	10.9	11.6	11.4	11.4	11.3	11.1	11.0	11.8	11.8	12.0	11.3	10.6	9.9	9.7	9.5	10.0
Fresno, Cal	10.7	10.9	10.8	9.5	8.5	7.4	7.2	6.5	6.0	5.4	5.4	5.1	5.1	5.2	5.5	5.3	5.8	5.8	6.5	7.3	8.1	8.5	8.9	9.6	7.3
Galveston, Tex	6.2	6.9	6.9	7.1	7.1	6.6	6.3	6.7	8.1	8.7	8.8	8.3	7.9	8.8	8.4	8.1	8.4	8.0	8.1	7.2	6.7	6.3	6.4	6.4	7.4
Grand Haven, Mich	6.5	6.2	6.6	7.1	7.0	6.7	7.0	7.7	8.7	9.0	9.4	9.8	10.8	10.7	10.7	10.0	9.3	8.3	7.3	5.8	4.8	5.1	5.3	5.9	7.7
Grand Junction, Colo	5.3	5.5	5.6	5.3	6.0	5.8	5.2	5.3	6.7	8.4	8.5	7.8	5.5	5.8	6.3	7.6	7.3	7.4	9.0	8.5	6.4	5.6	4.8	5.0	6.4
Green Bay, Wis	6.2	6.2	6.2	5.6	5.7	5.0	5.7	6.7	7.6	8.2	8.9	8.9	8.9	9.4	9.3	8.5	9.0	8.9	8.1	7.3	6.6	6.6	6.8	6.5	7.4
Harrisburg, Pa	4.5	4.6	4.6	4.6	4.3	4.5	5.0	5.6	6.3	7.1	7.5	7.7	8.2	8.6	8.9	9.4	9.3	8.9	7.7	6.7	6.6	6.0	5.3	4.9	6.5
Hatteras, N. C	11.4	11.7	11.6	11.3	10.9	10.7	11.0	11.8	12.3	12.8	13.2	13.6	13.8	14.4	14.7	14.8	15.0	14.2	13.8	13.1	13.0	12.4	11.9	11.2	12.7
Havre, Mont	7.8	8.4	7.0	7.6	7.1	8.7	9.0	8.7	9.8	12.1	13.3	13.6	15.1	14.7	15.4	15.0	15.4	14.6	14.8	14.9	14.3	12.3	9.5	7.6	11.7
Helena, Mont	8.3	8.8	8.6	7.7	7.3	7.5	6.6	6.0	4.6	5.0	6.0	7.3	8.3	8.9	8.7	9.3	10.6	10.5	10.8	10.7	9.1	8.3	8.4	8.6	8.2
Huron, S. Dak	10.9	10.8	10.5	9.7	9.4	9.9	9.8	9.9	11.2	13.1	14.7	15.5	15.5	16.8	16.9	16.7	16.7	16.9	16.2	14.6	13.5	11.8	11.5	11.2	13.1
Independence, Cal	9.5	8.0	5.9	6.0	6.0	6.0	5.7	5.7	5.6	5.4	6.6	6.9	7.3	7.8	10.2	12.1	12.5	13.2	13.8	13.5	11.9	10.5	9.3	9.5	8.7
Indianapolis, Ind	7.7	7.9	7.5	8.0	7.6	7.8	7.9	9.0	10.2	10.1	10.3	10.2	10.6	11.4	11.8	11.9	11.2	10.8	9.7	8.6	7.9	8.4	7.8	7.5	9.3
Jacksonville, Fla	6.4	6.8	6.7	6.8	6.9	6.6	6.3	7.4	7.9	7.7	8.3	8.8	9.4	9.8	9.9	10.4	10.7	10.2	9.3	7.7	7.0	7.0	6.7	5.9	7.9
Jupiter, Fla	8.2	8.9	8.1	7.6	7.9	7.5	7.4	8.5	9.2	10.9	11.1	11.3	11.6	12.0	12.2	12.1	11.2	10.3	9.3	8.5	8.3	9.0	8.7	8.1	9.5
Kalispell, Mont	5.8	5.8	5.1	5.2	5.0	5.3	6.0	5.2	5.8	5.4	5.3	6.3	7.0	7.8	8.5	9.5	10.5	10.4	9.8	9.6	8.0	7.7	6.8	6.6	7.0
Kansas City, Mo	5.9	5.7	5.8	5.8	5.5	5.0	5.3	6.2	6.5	6.8	7.7	8.2	8.4	8.4	8.7	8.7	8.9	8.8	7.6	7.3	6.5	6.2	7.0	6.8	7.0
Keokuk, Iowa	5.1	4.8	5.5	6.0	6.1	5.5	5.7	6.4	6.4	7.4	7.9	8.2	8.3	8.9	7.9	7.9	8.0	7.7	7.2	6.2	5.6	4.9	5.4	5.2	6.6
Key West, Fla	6.7	6.7	6.7	6.3	6.5	6.1	6.4	6.8	7.4	8.5	8.1	8.5	8.3	8.4	8.0	7.6	8.0	7.5	7.5	6.8	6.3	6.4	6.7	6.8	7.2
Kittyhawk, N. C	13.1	13.1	13.3	12.9	12.3	12.2	12.7	13.9	14.4	14.8	14.2	13.5	13.2	14.7	16.4	16.4	16.8	16.4	15.9	15.3	14.4	14.2	13.6	13.4	14.2
Knoxville, Tenn	5.6	5.1	5.0	4.5	4.4	4.3	3.8	4.4	5.2	5.6	6.0	6.4	7.0	8.6	8.7	8.5	8.6	7.8	6.5	6.0	5.5	5.0	5.6	4.9	6.0
La Crosse, Wis	4.9	5.3	4.6	4.2	4.0	4.5	4.3	5.3	5.9	7.3	6.9	7.7	7.9	7.9	7.5	7.7	7.9	7.5	6.5	6.6	5.7	6.0	4.8	4.2	6.0
Lander, Wyo	4.4	4.0	3.7	3.3	2.7	2.7	2.2	2.2	2.2	2.6	3.1	2.9	3.7	4.8	6.1	6.5	8.0	7.9	7.5	7.2	5.9	5.2	4.7	4.4	4.5
Lexington, Ky	7.7	7.9	7.4	7.2	7.3	7.5	7.5	8.4	9.5	9.4	9.2	8.9	9.3	9.2	9.7	9.1	8.6	8.4	7.4	6.5	6.9	7.3	7.9	8.0	8.2
Little Rock, Ark	3.7	3.9	4.1	4.4	4.9	5.1	5.1	6.1	5.6	6.6	6.5	7.2	7.4	8.3	8.2	7.8	7.5	7.3	6.3	6.1	4.9	4.4	4.6	4.3	5.9
Los Angeles, Cal	3.0	2.4	2.7	2.4	2.5	2.2	2.4	2.4	2.5	2.8	3.3	3.8	4.1	4.8	6.3	8.0	9.1	9.1	9.1	8.5	7.7	6.3	4.7	3.8	4.7
Louisville, Ky	6.4	6.7	6.1	6.7	6.9	6.8	6.9	7.5	7.9	7.9	8.6	9.5	9.7	9.7	9.9	9.8	10.1	9.3	9.1	7.6	6.6	6.9	6.1	6.5	7.9
Lynchburg, Va	2.3	2.0	1.9	2.0	2.0	1.6	2.1	3.5	4.1	4.3	4.9	5.7	5.7	5.6	5.6	5.5	5.1	4.6	3.8	2.7	2.4	2.3	1.7	1.8	3.5
Macon, Ga	4.2	3.8	3.5	3.4	3.4	3.3	3.7	5.3	5.9	6.6	7.3	7.5	8.3	8.7	9.2	8.1	7.4	7.4	6.6	4.9	4.6	4.5	5.3	4.3	5.7
Marquette, Mich	9.1	9.4	9.5	8.6	8.8	8.8	8.4	9.3	9.1	9.6	9.9	10.1	10.6	10.1	9.5	9.8	9.6	9.8	9.5	8.4	6.9	7.2	8.2	8.8	9.1
Memphis, Tenn	7.3	7.0	6.6	7.4	7.4	7.7	7.8	9.0	8.7	8.5	8.4	9.2	9.7	9.2	9.0	9.3	9.5	8.8	8.6	8.4	7.6	6.9	7.7	7.5	8.2
Milwaukee, Wis	8.7	8.9	8.1	7.7	7.7	7.5	7.4	7.9	8.2	8.5	9.6	9.7	10.0	10.7	11.7	11.2	11.1	10.5	9.3	8.8	8.2	8.3	8.7	8.7	9.0
Mobile, Ala	6.8	7.4	7.1	7.3	7.0	6.9	6.7	6.4	7.8	8.5	8.7	9.6	11.9	12.2	12.1	12.1	11.2	10.8	10.0	8.2	7.5	7.4	6.9	6.6	8.6
Montgomery, Ala	4.8	4.3	4.5	4.4	4.7	4.9	5.2	6.2	7.1	7.5	7.9	8.6	8.3	8.8	9.3	8.5	8.4	7.6	7.4	5.5	5.1	5.0	4.5	4.4	6.4
Moorhead, Minn	7.1	7.9	8.4	8.0	8.5	8.4	8.6	9.5	11.6	13.0	13.9	13.8	14.3	14.8	15.2	15.3	15.1	15.2	14.5	13.4	11.3	9.3	8.0	7.6	11.4
Mount Tamalpais, Cal	23.3	23.9	22.9	21.7	21.0	20.0	19.8	19.4	18.2	16.5	15.5	13.9	11.6	10.0	9.4	9.1	10.3	12.4	13.8	15.2	17.5	19.4	22.7	23.0	17.1
Nantucket, Mass	9.0	9.3	9.9	9.7	9.8	10.4	10.5	12.1	12.2	12.4	12.7	13.1	12.6	12.8	12.4	12.2	11.7	10.9	9.9	9.7	9.1	9.5	9.4	9.4	10.9
Nashville, Tenn	4.2	4.4	3.9	4.0	3.8	4.2	4.0	5.0	6.1	6.6	7.1	7.6	8.0	8.3	9.0	9.1	8.7	8.3	7.9	7.1	5.7	5.2	4.6	4.4	6.1
Neah Bay, Wash	5.2	5.3	4.7	4.3	4.2	3.5	3.9	3.7	3.4	4.6	5.2	5.2	6.2	6.6	6.9	7.7	8.2	8.9	9.2	8.9	8.9	8.7	7.0	5.4	6.1
New Haven, Conn	5.8	5.8	5.9	6.3	7.0	6.7	7.9	8.8	9.2	10.5	11.3	11.0	11.7	12.8	12.7	12.9	11.4	10.1	8.6	7.9	7.4	7.4	6.7	6.0	8.8
New Orleans, La	6.7	6.5	6.0	5.9	5.6	5.2	5.5	6.2	8.1	8.3	8.8	8.6	9.0	9.0	8.9	8.4	8.9	8.9	8.4	7.4	6.9	6.5	6.2	6.3	7.3

TABLE V.—*Average wind movement, etc.*—Continued.

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
New York, N. Y	10.6	10.4	10.0	9.7	9.2	9.5	10.4	9.5	10.6	10.8	11.6	12.7	14.5	14.5	14.1	13.9	13.4	13.3	12.8	14.0	11.8	11.7	11.1	11.1	11.7
Norfolk, Va	8.2	7.9	7.8	7.7	7.9	8.2	9.1	10.3	10.9	11.0	11.1	11.2	11.0	11.2	11.8	11.7	12.6	11.0	9.8	8.9	8.6	8.4	8.8	8.7	9.7
Northfield, Vt	6.2	6.9	7.2	6.0	5.6	4.5	5.7	7.6	9.0	9.4	10.8	11.4	11.0	11.6	12.1	12.2	11.8	10.3	7.9	6.0	6.6	6.7	7.2	6.9	8.4
North Platte, Nebr	7.9	8.4	7.7	7.9	6.4	5.4	5.1	5.1	6.9	8.8	9.9	10.7	11.1	11.5	12.3	12.1	11.5	11.3	11.2	10.8	9.3	9.4	9.5	8.9	9.1
Oklahoma, Okla	5.3	5.6	6.3	6.6	7.1	6.6	6.5	7.5	8.3	9.3	9.5	10.7	10.8	10.7	10.6	11.1	10.3	9.8	9.1	7.9	6.1	5.8	6.3	6.3	8.1
Omaha, Nebr	5.8	6.0	5.6	5.9	5.5	5.3	4.9	6.0	7.5	8.5	9.1	9.3	9.6	10.0	10.1	9.8	9.8	9.2	9.1	8.2	6.9	6.1	5.4	6.0	7.5
Oswego, N. Y	7.9	7.7	7.9	8.5	8.3	8.0	8.1	8.7	9.1	9.6	9.5	9.9	10.1	10.3	9.7	9.3	9.3	8.8	7.9	7.7	7.4	7.6	7.7	7.5	8.6
Palestine, Tex	5.2	5.5	6.0	5.3	5.0	4.9	4.8	4.9	6.0	6.5	7.4	6.9	7.5	8.4	8.3	8.3	8.2	8.2	6.9	6.0	4.5	4.9	5.3	5.1	6.2
Parkersburg, W. Va	3.6	3.2	2.6	2.7	2.9	3.2	3.4	4.4	5.4	5.5	5.8	6.2	6.6	6.9	6.9	6.4	6.8	6.2	4.6	4.5	3.4	3.0	3.2	3.3	4.6
Pensacola, Fla	10.1	10.6	10.5	11.3	11.0	10.6	10.5	10.6	10.4	11.4	12.0	12.5	13.2	14.0	13.8	13.4	14.2	13.6	12.6	10.7	9.9	10.3	10.9	11.2	11.6
Phenix, Ariz	3.6	3.4	3.4	2.7	3.1	3.1	3.5	3.7	3.5	4.1	4.0	3.6	3.6	4.0	5.1	5.6	6.3	6.5	7.1	6.3	5.5	4.4	4.5	4.0	4.4
Philadelphia, Pa	7.3	7.2	7.4	7.9	7.9	7.7	8.7	9.9	10.4	10.5	11.1	11.4	12.0	12.5	12.7	12.8	12.7	11.0	10.4	9.1	9.2	8.3	8.0	7.5	9.7
Pierre, S. Dak	11.9	10.4	9.9	8.7	8.5	7.3	8.1	10.7	11.6	13.3	14.2	15.1	16.1	17.7	17.9	18.4	18.5	16.4	16.8	17.2	14.9	14.0	13.5	12.1	13.5
Pittsburg, Pa	4.5	4.4	4.4	4.2	4.3	4.2	4.9	4.9	5.7	6.7	7.3	7.6	8.2	8.5	7.8	8.3	8.3	8.4	7.4	5.7	5.7	5.4	5.6	5.4	6.2
Pocatello, Idaho	10.3	11.5	12.0	12.1	11.9	11.2	10.5	10.1	10.1	10.7	11.2	9.8	9.9	9.3	10.3	10.8	12.0	12.6	13.0	11.0	10.4	8.8	8.2	9.2	10.7
Point Reyes Lt., Cal	24.0	23.0	21.7	21.3	20.3	19.7	19.2	18.8	19.5	19.3	19.4	18.9	18.7	17.7	17.7	18.3	19.2	19.3	20.1	21.7	22.5	23.4	24.9	24.5	20.5
Port Crescent, Wash	3.3	3.3	3.2	3.3	3.3	2.8	2.7	2.8	2.6	2.5	3.6	4.8	5.8	6.7	7.0	7.3	7.2	6.6	6.0	6.5	6.5	5.7	5.1	3.9	4.7
Port Huron, Mich	7.8	7.9	8.2	8.2	7.9	7.3	7.9	8.7	9.8	11.2	11.2	11.9	12.5	12.4	12.7	12.4	12.3	11.1	10.9	9.7	8.6	7.8	7.4	8.1	9.7
Portland, Me	5.1	5.2	5.2	5.7	5.6	5.5	5.8	6.9	7.5	7.8	8.8	9.1	9.8	10.7	10.9	10.9	9.8	8.4	6.9	6.5	6.1	5.5	5.2	5.2	7.2
Portland, Oreg	7.8	7.8	7.0	6.5	7.1	6.4	6.1	5.4	5.6	6.3	7.4	7.9	8.2	8.3	8.8	8.8	8.8	9.1	8.9	9.1	9.7	8.8	8.7	8.5	7.8
Pueblo, Colo	6.8	6.6	4.7	4.2	3.7	4.8	4.4	4.5	4.6	5.1	5.5	5.4	5.8	6.0	7.1	7.7	9.0	9.7	10.2	11.0	9.5	7.8	6.7	6.2	6.5
Raleigh, N. C	5.1	4.9	4.8	4.6	4.8	5.1	5.1	6.6	7.1	7.1	7.2	6.8	7.1	7.7	7.1	7.5	7.3	7.3	6.4	5.4	5.1	5.4	5.5	5.4	6.1
Rapid City, S. Dak	4.5	4.7	4.7	5.0	4.5	4.9	4.4	5.5	6.6	7.2	7.7	7.3	7.8	7.4	7.4	7.2	6.7	7.1	6.6	6.5	5.7	4.6	4.8	4.9	6.0
Red Bluff, Cal	4.9	5.1	4.9	4.6	4.0	3.8	3.3	3.0	3.6	4.6	5.1	5.5	5.6	5.7	5.7	6.0	6.3	6.5	6.5	6.4	6.4	6.2	5.2	5.2	5.2
Richmond, Va	4.3	4.2	3.9	3.9	4.0	4.0	4.3	5.0	5.6	5.4	6.3	6.2	6.6	6.8	6.7	6.5	6.4	5.9	5.2	4.7	4.2	4.2	4.0	4.5	5.1
Rochester, N. Y	5.3	5.6	5.4	5.5	5.5	6.0	6.4	7.5	7.8	8.2	8.5	9.3	9.3	9.9	9.6	9.4	9.0	8.3	6.5	5.3	5.5	5.2	5.4	5.2	7.1
Roseburg, Oreg	2.7	2.2	2.2	2.0	2.1	2.3	2.3	1.8	2.0	2.2	2.6	3.0	3.3	3.6	4.3	4.8	5.2	5.8	6.7	6.6	7.5	6.7	5.1	3.3	3.8
Sacramento, Cal	9.8	9.1	9.2	9.0	8.9	8.7	8.4	7.9	7.2	7.6	7.8	7.8	7.9	8.0	8.8	9.5	10.0	11.0	11.5	12.4	12.4	12.3	11.8	11.3	9.5
St. Louis, Mo	7.9	8.0	7.6	8.0	8.3	7.8	8.3	8.6	8.4	9.0	9.7	10.0	10.2	10.3	9.8	9.9	9.7	9.7	9.3	8.8	8.0	7.6	7.8	7.8	8.8
St. Paul, Minn	5.4	5.0	4.8	4.6	4.4	4.9	5.4	6.2	7.7	8.5	9.4	9.9	10.4	10.9	11.4	10.6	10.6	11.0	9.9	9.3	7.6	6.8	6.7	5.6	7.8
Salt Lake City, Utah	5.5	5.2	5.0	4.5	3.8	4.4	4.0	4.1	3.4	2.8	4.2	6.5	7.9	8.2	8.3	9.0	9.6	10.2	10.5	9.1	7.4	7.4	7.7	7.0	6.5
San Antonio, Tex	5.3	4.6	3.6	3.3	3.3	3.3	3.2	3.5	4.7	6.4	7.0	7.0	7.1	7.2	7.3	7.2	7.0	7.3	8.2	7.5	6.0	6.6	6.8	6.2	5.8
San Diego, Cal	3.6	3.4	2.9	3.0	3.0	3.5	3.6	3.0	3.4	3.5	4.1	4.9	7.2	8.2	9.8	10.2	10.3	9.8	9.6	8.9	7.5	6.0	5.3	4.5	5.8
Sandusky, Ohio	7.0	6.8	6.7	7.0	7.1	7.2	7.1	6.9	7.1	7.3	8.2	8.5	8.8	8.7	8.9	9.4	10.0	10.0	8.9	8.2	8.0	7.6	7.1	7.0	7.9
San Francisco, Cal	14.5	12.7	11.5	10.7	9.8	9.7	8.5	7.9	6.6	7.1	7.7	8.8	10.7	12.9	16.2	18.9	22.7	23.9	23.6	22.7	22.3	20.5	18.0	16.4	14.3
San Luis Obispo, Cal	2.7	2.6	2.7	2.9	2.5	2.7	3.1	3.6	3.6	3.8	4.5	4.4	4.8	6.5	7.3	8.5	8.5	8.9	8.4	8.3	7.2	5.8	4.4	3.6	5.1
Santa Fe, N. Mex	6.4	5.9	5.7	5.3	5.4	5.0	4.8	4.7	3.4	4.5	5.2	6.3	7.6	8.4	9.8	9.7	10.0	9.2	9.7	9.9	8.7	7.3	6.7	6.5	6.9
Sault Ste. Marie, Mich	4.7	5.2	5.1	5.7	5.8	6.0	6.0	7.0	7.8	8.6	9.2	10.6	11.4	12.3	12.0	12.2	11.6	10.7	9.2	7.8	6.6	5.7	5.5	4.9	8.0
Savannah, Ga	5.5	5.2	5.0	4.9	4.8	4.8	4.8	7.0	7.8	7.9	7.9	8.6	9.1	9.7	10.3	10.0	10.3	9.8	8.4	7.4	6.4	5.9	5.8	5.8	7.2
Seattle, Wash	4.3	4.1	4.4	4.3	4.0	4.2	4.1	3.9	4.2	4.7	5.1	5.1	6.2	6.3	6.3	6.6	7.1	7.5	8.0	8.1	7.6	7.2	8.3	5.1	5.6
Shreveport, La	5.3	4.8	4.5	4.0	4.0	4.0	4.0	4.1	5.3	5.6	5.6	5.6	6.0	6.5	7.7	7.3	7.5	7.6	6.9	5.2	4.8	5.2	5.1	5.1	5.5
Sioux City, Iowa	9.1	10.4	11.1	9.5	8.8	9.0	8.9	9.2	10.4	11.6	13.2	12.8	13.0	13.4	13.5	14.4	14.6	14.2	14.2	13.0	11.7	11.7	11.9	10.5	11.7
Spokane, Wash	5.2	5.6	4.7	5.0	4.8	4.3	4.3	4.4	5.2	6.0	7.0	7.3	7.5	8.4	9.0	9.3	9.3	9.4	9.1	9.2	8.5	7.6	6.1	5.3	6.8
Springfield, Ill	6.5	6.4	6.7	6.5	6.6	6.7	7.3	7.8	8.4	8.8	9.2	9.0	9.0	8.9	8.9	8.9	9.0	9.1	8.6	7.6	6.8	7.3	7.2	7.1	7.8
Springfield, Mo	7.2	6.6	6.8	7.1	7.0	7.1	6.9	7.0	7.5	7.7	8.1	8.2	9.5	9.1	8.6	8.5	8.6	7.8	7.9	7.5	6.4	6.8	6.8	6.5	7.6
Tacoma, Wash	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Tampa, Fla	4.2	4.4	4.4	4.4	5.2	5.0	5.0	6.6	7.1	7.3	7.5	7.7	7.7	8.0	8.3	8.4	7.9	7.3	6.5	5.4	5.4	5.1	5.0	4.4	6.9
Toledo, Ohio	7.4	7.7	7.9	7.9	7.5	7.8	7.5	8.2	9.5	10.0	10.8	10.9	11.6	11.8	12.0	12.5	13.0	11.6	10.6	9.2	8.0	7.5	7.4	7.5	9.4
Valentine, Nebr	8.5	8.4	8.1	7.7	8.1	7.3	7.4	8.6	10.2	12.0	13.0	13.7	14.8	14.6	14.5	13.9	14.4	14.2	14.4	14.0	12.2	11.5	10.4	8.8	11.3
Vicksburg, Miss	4.9	4.9	5.0	4.9	4.6	4.8	4.6	4.8	5.6	6.0	6.3	6.6	6.1	6.8	6.2	6.8	7.2	6.4	5.7	4.8	4.4	4.8	5.8	5.5	5.6
Vineyard Haven.*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Walla Walla, Wash	5.3	5.1	4.7	4.4	4.7	4.7	4.6	4.4	4.5	4.9	5.6	5.7	5.7	5.8	6.3	6.6	6.7	6.9	6.8	7.0	6.9	6.2	6.2	5.6	5.6
Washington, D. C	4.3	3.8	3.8	3.7	3.8	4.1	4.9	5.7	6.3	7.0	7.8	7.8	8.2	8.6	8.8	8.3	7.8	6.9	6.2	5.4	4.7	4.5	4.6	4.5	5.9
Wichita, Kans	5.6	5.4	5.5	5.6	6.0	6.0	6.0	6.0	6.7	7.6	7.8	7.9	9.4	9.5	9.6	9.4	9.4	9.0	8.1	7.2	5.6	5.3	5.5	5.9	7.1
Williston, N. Dak	7.5	6.8	6.9	6.8	7.6	7.8	7.4	7.8	10.3	12.4	14.0	14.4	16.2	16.4	16.6	16.8	16.7	16.3	16.2	16.1	15.1	11.8	9.6	8.3	11.9
Wilmington, N. C	6.7	6.6	5.4	4.9	5.1	5.0	5.1	6.5	8.1	8.2	8.7	9.1	10.2	11.0	11.4	10.9	11.2	10.1	9.4	7.4	7.0	6.6	6.8	6.7	7.8
Winnemucca, Nev	8.4	8.8	8.7	7.8	7.8	7.5	7.6	6.5	6.4	6.5	8.1	7.9	8.4	8.2	9.2	10.0	10.9	11.5	11.5	12.3	11.3	9.7	8.2	8.4	8.8
Woods Hole, Mass.*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Yankton, S. Dak	6.7	6.1	6.6	6.0	5.8	5.0	5.7	6.2	7.3	8.3	9.5	9.3	10.2	11.0	11.2	11.3	11.4	12.0	11.8	10.7	8.7	7.8	7.4	6.9	8.5
West Indies.																									
Basseterre, St. Kitts	9.7	9.3	9.4	9.4	9.5	10.1	11.3	11.5	12.4	12.8	12.5	13.1	12.9	12.3	11.1	11.0	10.3	9.0	9.3	9.3	9.3	9.3	9.6	10.1	10.0
Bridgetown, Bar	6.4	6.7	6.6	6.9	6.6	7.2	10.4	12.6	13.7	14.0	14.7	14.2	13.7	13.7	12.9	11.9	10.8	8.8	6.7	6.9	6.9	6.5	6.9	6.8	9.7
Cienfuegos, Cuba	5.2	5.1	4.5	4.4	4.3	4.5	4.6	5.1	5.3	6.3	7.2	8.1	9.7	10.6	10.9	10.6	8.8	8.6	7.2	6.1	5.8	5.7	5.3	6.1	6.7
Havana, Cuba	5.1	5.0	5.4	4.9	4.9	4.8	4.7	5.6	7.7	9.1	10.1	11.2	13.2	14.4	14.4	14.1	14.3	14.2	11.5	9.4	8.2	6.7	6.9	6.1	8.8
Kingston, Jamaica	3.8	4.2	4.6	4.5	4.4	4.4	4.2	3.5	3.2	4.9	7.7	10.3	12.4	12.9	12.3	9.7	8.5	6.8	4.4	3.7	3.6	3.6	3.8	4.0	6.1
Port of Spain, Trin	3.0	3.1	3.2	2.8	2.6	2.7	3.6	5.6	6.5	6.6	6.4	6.7	6.9	6.4	6.2	6.0	5.7	4.6	3.7	3.1	2.6	2.8	3.2	3.1	4.5
Puerto Principe, Cuba	3.8	4.2	3.7	4.0	3.5	3.4	3.7	6.9	9.0	9.1	8.4	7.7	7.8	7.6	8.7	8.8	10.3	9.4	8.5	6.0	5.1	4.8	4.7	4.6	6.4
Roseau, Dominica	4.2	4.3	4.0	3.8	4.2	4.0	4.1	5.6	6.1	7.4	8.2	8.1	7.2	7.3	6.5	5.6	5.1	4.4	4.4	4.4	4.0	3.7	4.1	4.4	5.2
San Juan, Puerto Rico	8.0	7.6	7.4	6.8	6.8	7.2	7.9	11.5	13.5	15.0	16.4	17.4	16.7	15.4	14.9	14.1	12.8	11.8	10.8	9.5	9.3	8.9	8.5	7.6	11.1
Santiago de Cuba	1.5	1.5	1.6	1.8	2.0	1.6	1.7	2.4	3.4	3.9	4.5	5.2	5.8	6.1	6.0	5.3	4.6	3.5	2.4	2.5	2.3	2.1	2.1	1.8	3.2
Santo Domingo, S. D	3.4	3.6	4.1	4.0	4.1	4.0	4.0	4.5	4.7	5.3	6.1	6.4	6.5	7.4	7.9	8.1	7.2	6.8	5.3	4.9	4.0	3.7	3.9	3.7	5.2
Willemstad, Curaçao	11.6	11.3	11.2	10.8	11.0	10.7	12.5	14.4	15.4	15.3	15.1	15.2	15.2	15.5	15.4	16.0	16.0	15.8	15.0	14.3	13.6	12.8	12.8	12.1	13.7

*Station discontinued.

Table VI.—*Resultant winds from observations at 8 a. m. and 8 p. m., daily, during the month of June, 1900.*

Stations.	Component direction from— N.	S.	E.	W.	Resultant. Direction from—	Duration.
	Hours.	Hours.	Hours.	Hours.	°	Hours.
New England.						
Eastport, Me	14	22	10	25	s. 62 w.	17
Portland, Me	14	23	10	25	s. 59 w.	18
Northfield, Vt	23	28	4	11	s. 54 w.	9
Boston, Mass	12	20	11	29	s. 66 w.	20
Nantucket, Mass	14	24	11	31	s. 63 w.	22
Woods Hole, Mass.‡	......	......	......	......	......	......
Block Island, R. I	12	25	11	30	s. 56 w.	23
New Haven, Conn	19	24	14	20	s. 50 w.	8
Middle Atlantic States.						
Albany, N. Y	16	26	9	17	s. 39 w.	13
Binghamton, N. Y.†	12	8	3	13	n. 68 w.	11
New York, N. Y	13	27	16	20	s. 17 w.	14
Harrisburg, Pa.†	10	9	9	11	n. 63 w.	2
Philadelphia, Pa	15	21	17	20	s. 27 w.	7
Atlantic City, N. J	12	19	17	27	s. 55 w.	12
Cape May, N. J.	15	25	16	17	s. 6 w.	10
Baltimore, Md	15	25	18	19	s. 6 w.	10
Washington, D. C	20	28	14	15	s. 7 w.	8
Lynchburg, Va	19	22	24	15	s. 72 e.	10
Norfolk, Va	10	33	18	15	s. 7 e.	23
Richmond, Va	15	27	11	19	s. 34 w.	14
South Atlantic States.						
Charlotte, N. C	9	34	17	19	s. 5 w.	25
Hatteras, N. C	9	33	8	27	s. 39 w.	31
Kittyhawk, N. C.*	5	14	11	8	s. 18 e.	10
Raleigh, N. C	9	36	12	22	s. 20 w.	29
Wilmington, N. C	10	31	13	18	s. 13 w.	22
Charleston, S. C	8	41	14	12	s. 3 e.	33
Augusta, Ga	9	35	14	14	s.	26
Savannah, Ga	6	36	10	22	s. 22 w.	82
Jacksonville, Fla	5	35	26	12	s. 25 o.	33
Florida Peninsula.						
Jupiter, Fla	4	36	29	10	s. 31 e.	37
Key West, Fla	6	27	34	9	s. 50 e.	33
Tampa, Fla	8	20	30	14	s. 53 e.	20
Eastern Gulf States.						
Atlanta, Ga	6	32	23	12	s. 23 e.	28
Macon, Ga†	3	19	11	4	s. 24 e.	18
Pensacola, Fla.†	7	16	4	10	s. 34 w.	11
Mobile, Ala	12	28	15	15	s.	16
Montgomery, Ala	5	31	25	9	s. 32 e.	30
Meridian, Miss.†	2	17	5	11	s. 22 w.	16
Vicksburg, Miss	14	24	22	10	s. 50 e.	16
New Orleans, La	10	33	10	18	s. 19 w.	24
Western Gulf States.						
Shreveport, La	16	30	13	10	s. 12 e.	14
Fort Smith, Ark	17	15	30	6	n. 85 e.	24
Little Rock, Ark	25	15	17	17	n.	10
Corpus Christi, Tex	2	42	27	6	s. 27 e.	46
Fort Worth, Tex†	8	14	4	8	s. 34 w.	7
Galveston, Tex	8	38	7	21	s. 25 w.	33
Palestine, Tex	15	34	12	11	s. 3 e.	19
San Antonio, Tex	13	27	30	3	s. 63 e.	30
Ohio Valley and Tennessee.						
Chattanooga, Tenn	16	27	23	10	s. 50 e.	17
Knoxville, Tenn	15	22	15	27	s. 60 w.	14
Memphis, Tenn	16	27	18	11	s. 32 e.	13
Nashville, Tenn	18	29	22	7	s. 43 w.	22
Lexington, Ky†	6	13	13	7	s. 41 e.	9
Louisville, Ky	22	26	13	9	s. 45 e.	6
Evansville, Ind.†	9	12	13	4	s. 72 e.	10
Indianapolis, Ind	25	16	22	12	n. 48 e.	14
Cincinnati, Ohio	24	18	20	15	n. 40 e.	8
Columbus, Ohio	22	20	22	13	n. 77 e.	9
Pittsburg, Pa	20	20	15	19	w.	4
Parkersburg, W. Va	20	21	17	14	s. 72 e.	3
Elkins, W. Va	24	17	12	18	n. 41 w.	9
Lower Lake Region.						
Buffalo, N. Y	20	23	11	22	s. 75 w.	11
Oswego, N. Y	13	23	11	29	s. 61 w.	21
Rochester, N. Y	21	17	11	26	n. 75 w.	16
Erie, Pa	17	19	17	19	s. 45 w.	3
Cleveland, Ohio	25	18	24	11	n. 62 e.	15
Sandusky, Ohio	17	19	25	13	s. 81 e.	12
Toledo, Ohio	18	13	26	17	n. 61 e.	10
Detroit, Mich	22	17	23	14	n. 61 e.	10
Upper Lake Region.						
Alpena, Mich	21	15	19	20	n. 9 w.	6
Escanaba, Mich	23	23	14	13	e.	1
Grand Haven, Mich	21	13	17	23	n. 37 w.	10
Marquette, Mich	27	18	12	21	n. 45 w.	13
Port Huron, Mich	31	18	13	13	n.	13
Sault Ste. Marie, Mich	11	12	19	29	s. 84 w.	10
Chicago, Ill	25	12	31	7	n. 62 e.	27
Milwaukee, Wis	23	12	29	11	n. 59 e.	21
Green Bay, Wis	17	19	23	10	s. 81 e.	13
Duluth, Minn	30	6	28	15	n. 28 e.	27
North Dakota.						
Moorhead, Minn	15	27	29	9	s. 59 e.	23
Bismarck, N. Dak	19	21	26	11	s. 82 e.	15
Williston, N. Dak	20	26	11	15	s. 34 w.	7

Stations.	Component direction from— N.	S.	E.	W.	Resultant. Direction from—	Duration.
	Hours.	Hours.	Hours.	Hours.	°	Hours.
Upper Mississippi Valley.						
St. Paul, Minn	17	23	30	19	s. 61 e	12
La Crosse, Wis. †	7	16	6	9	s. 18 w.	10
Davenport, Iowa	22	10	28	13	n. 51 e.	19
Des Moines, Iowa	17	22	30	8	s. 77 e.	23
Dubuque, Iowa	18	15	24	14	n. 73 e.	10
Keokuk, Iowa	24	17	20	14	n. 41 e.	9
Cairo, Ill	25	19	21	10	n. 61 e.	12
Springfield, Ill	15	15	31	11	e.	20
Hannibal, Mo†	11	6	14	6	n. 58 e.	9
St. Louis, Mo	29	14	21	11	n. 34 e.	18
Missouri Valley.						
Columbia, Mo.*	9	4	18	3	n. 72 e.	16
Kansas City, Mo	22	14	31	5	n. 73 e.	27
Springfield, Mo	21	19	27	5	n. 85 e.	22
Lincoln, Nebr	16	27	22	4	s. 59 e.	21
Omaha, Nebr	21	16	30	6	n. 78 e.	24
Valentine, Nebr	19	25	16	15	s. 9 e.	6
Sioux City, Iowa†	9	14	12	2	s. 63 e.	11
Pierre, S. Dak	14	25	28	11	s. 57 e.	20
Huron, S. Dak	11	24	31	11	s. 57 e.	24
Yankton, S. Dak†	8	10	14	3	s. 80 e.	11
Northern Slope.						
Havre, Mont	14	15	14	30	s. 87 w	16
Miles City, Mont	19	16	21	18	n. 45 e.	4
Helena, Mont	8	20	3	40	s. 72 w.	39
Kalispell, Mont	12	21	11	33	s. 68 w.	24
Rapid City, S. Dak	16	22	23	16	s. 49 e.	9
Cheyenne, Wyo	19	21	13	24	s. 80 w.	11
Lander, Wyo	19	25	15	22	s. 49 w.	9
North Platte, Nebr	13	26	24	9	s. 49 e.	20
Middle Slope.						
Denver, Colo	13	29	13	20	s. 24 w.	18
Pueblo, Colo	25	12	18	19	n. 4 w.	13
Concordia, Kans	12	29	26	4	s. 52 e.	28
Dodge, Kans	13	25	30	7	s. 62 e.	26
Wichita, Kans	13	25	30	2	s. 67 e.	30
Oklahoma, Okla	19	25	22	5	s. 71 e.	18
Southern Slope.						
Abilene, Tex	17	28	23	10	s. 50 e.	17
Amarillo, Tex	12	31	16	13	s. 9 e.	19
Southern Plateau.						
El Paso, Tex	16	6	30	20	n. 45 e.	14
Santa Fe, N. Mex	13	25	33	10	s. 62 e.	26
Flagstaff, Ariz	18	21	1	34	s. 85 w.	33
Phenix, Ariz	14	4	19	34	n. 56 w.	18
Yuma, Ariz	9	18	10	32	s. 68 w.	24
Independence, Cal	15	21	14	25	s. 61 w.	12
Middle Plateau.						
Carson City, Nev	16	18	1	36	s. 87 w.	35
Winnemucca, Nev	14	22	9	28	s. 67 w.	21
Cedar City, Utah	3	38	24	17	s. 11 e.	36
Salt Lake City, Utah	20	20	21	13	e.	8
Grand Junction, Colo	14	15	32	14	s. 87 e.	18
Northern Plateau.						
Baker City, Oreg	22	25	6	16	s. 73 w.	10
Boise, Idaho	20	13	11	30	n. 70 w.	20
Pocatello, Idaho	7	35	5	21	s. 32 w.	30
Spokane, Wash	6	31	9	28	s. 37 w.	31
Walla Walla, Wash	14	27	11	16	s. 21 w.	14
North Pacific Coast Region.						
Neah Bay, Wash	10	15	9	35	s. 79 w.	26
Port Crescent, Wash*	5	4	4	22	n. 87 w.	18
Seattle, Wash	12	28	17	18	s. 3 w.	16
Tacoma, Wash	23	21	3	23	n. 84 w.	20
Astoria, Oreg	16	22	4	38	s. 80 w.	34
Portland, Oreg	21	20	11	22	n. 85 w.	11
Roseburg, Oreg	37	2	16	19	n. 5 w.	35
Middle Pacific Coast Region.						
Eureka, Cal	29	11	6	29	n. 52 w.	29
Mount Tamalpais, Cal	16	8	1	47	n 80 w.	48
Red Bluff, Cal	19	23	21	11	s. 68 e.	11
Sacramento, Cal	3	45	7	23	s. 21 w.	44
San Francisco, Cal	0	21	0	50	s. 67 w.	54
South Pacific Coast Region.						
Fresno, Cal	37	2	3	40	n. 47 w.	51
Los Angeles, Cal	6	24	9	32	s. 52 w.	29
San Diego, Cal	18	18	6	34	w.	28
San Luis Obispo, Cal	20	14	3	29	n. 77 w.	27
West Indies.						
Basseterre, St. Kitts Island	2	13	50	0	s. 78 e.	51
Bridgetown, Barbados	6	13	53	0	s. 82 e.	53
Cienfuegos, Cuba	24	11	39	2	n. 71 e.	39
Havana, Cuba	6	7	53	1	s. 89 e.	52
Kingston, Jamaica	43	4	21	3	n. 32 e.	34
Port of Spain, Trinidad	3	2	55	2	n. 89 e.	53
Puerto Principe, Cuba	15	8	44	5	n. 80 e.	40
Roseau, Dominica, W. I	18	15	40	6	n. 85 e.	34
San Juan, Porto Rico	1	27	40	2	s. 56 e.	46
Santiago de Cuba, Cuba	27	19	24	5	n. 67 e.	21
Santo Domingo, S. Domingo, W. I.	32	12	23	7	n. 39 e.	26
Willemstad, Curaçao	1	10	55	0	s. 81 e.	56

* From observations at 8 p. m. only. † From observations at 8 a. m. only. ‡ Station closed June 11, 1900.

TABLE VII.—*Thunderstorms and auroras, June, 1900.*

States.	No. of stations.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total. No.	Total. Days.	
Alabama	52	T.	1	3	3	2	2	6	6	8	1	1	2	3	4	4	3	3	4	4	2	2	2	2	6	4	1	4	6	5	1	2		97	30	T.
		A.																																0	0	A.
Arizona	56	T.	1						2	3	3													2					2	3	2	2		20	9	T.
		A.																																0	0	A.
Arkansas	57	T.	8	11		2	7	2	12	7	8	13	2	11					13	12	1	1	1	8	4	5	8	7	7	8	4	9		171	25	T.
		A.																																0	0	A.
California	167	T.		1						3	3	1	2	3	18	1	7		1					1										41	11	T.
		A.																																0	0	A.
Colorado	81	T.	18	10	13	13	3	1	1	11	11	15	15	14	11	18		1	9	11	4	8	9	9	9	8	12	1	4	11	11	14		275	29	T.
		A.																																0	0	A.
Connecticut	21	T.		1						5			6						1					8	1				11	12	2			47	9	T.
		A.																																0	0	A.
Delaware	5	T.		1	1		1			5			3	1		2													1		1			16	9	T.
		A.																																0	0	A.
Dist. of Columbia	4	T.		1						1				1	1	1							1					1	1	1				9	9	T.
		A.																																0	0	A.
Florida	47	T.			1	5	6	6	8	8	7	7	7	8	5	6	4	5	6	6	4	2	1	8	5	6	9	4	6	4	3	4		151	28	T.
		A.																																0	0	A.
Georgia	55	T.		1	4	12	7	5	14	12	3	8	6	6	4	2	5	12	9	9		1	2	7	10	12	8	11	13	8	6	8		205	28	T.
		A.																																0	0	A.
Idaho	34	T.	2		1	2				2					7	4	8	1			1	1		2	5	4				1		1		42	15	T.
		A.																																0	0	A.
Illinois	92	T.	14				10	18	13	4		35	4	1	24	1	4	2	9			2	33	12	12	16	12	3	7	8	24	15		283	25	T.
		A.								1	1										1										1			4	4	A.
Indiana	58	T.	7					11	18	4		9	4	4	8	4	2		1				6	5	7	11	9	9	5	2	16	3		145	21	T.
		A.																																0	0	A.
Indian Territory	11	T.	3	1	1				1	1			3		1					2										2	1	5		21.	11	T.
		A.																																0	0	A.
Iowa	149	T.	13	2				14	4		10	14		4	4			9	7	1		4	15	1	1			5	28		4			140	18	T.
		A.																																0	0	A.
Kansas	77	T.	9		1	6	1	9	16	10	7	14	10	20	7	1	2	4	14	3	1	1	5	7		1	2		10	12	4	8		175	3	T.
		A.																																0	0	A.
Kentucky	41	T.	5	4	1	1	6	7	8	2	1		4	8	3	4	6	2	1					1	1	1	4	6	7	5	6	6		100	25	T.
		A.																																0	0	A.
Louisiana	46	T.	6	8	6	7	9	6	2	1	4	6	3	4	3	2	3	4	3	10	11	8	9	4	11	5	3	11	8	10	7	7		181	30	T.
		A.																																0	0	A.
Maine	19	T.		1																				1					7	3	3			15	5	T.
		A.																																0	0	A.
Maryland	48	T.	4	13	1			3	2	21	1		2	6	6	16	1	2		8	7		3		1	2	2	13	14	9	3			140	23	T.
		A.																																0	0	A.
Massachusetts	48	T.		1	1								10						1				1	15	1				17	23	2	1		73	11	T.
		A.																																0	0	A.
Michigan	106	T.			1			8	15	1		18	1		14							3	6	1		2		11	20	3				104	14	T.
		A.							1								1																	2	2	A.
Minnesota	67	T.	1	1	3	7		5	1	3	22	1		9	6	1		2			1	2	8				4	4	5			7		94	20	T.
		A.	1																															1	1	A.
Mississippi	44	T.	6	7	6	7	7	8	4	2	1	3	9	5	2	1	3	3	8	8	10	5	4	6	3	3	5	7	7	7	1	4		152	30	T.
		A.																																0	0	A.
Missouri	95	T.	25	2		1	10	36	40	5	7	42	20	28			4	12	49	4		1	30	18	13	35	19	6	32	25	24	34		522	26	T.
		A.																																0	0	A.
Montana	40	T.	3	1	2					1				*1	2	8	3	9	3				1	4	7	9	8	1	1	2	5	1		72	20	T.
		A.																																0	0	A.
Nebraska	142	T.	13	1	5	5	5	6	1		13	13	3	17	1	5	12	28	19	1	2	22	8				3	3	21	7	6	3		223	26	T.
		A.																																0	0	A.
Nevada	40	T.		1	1			1	1	5	4	2	4	5	6	2	1																	33	12	T.
		A.																																0	0	A.
New Hampshire	19	T.	3	6	5				1	1			5							1				7				1	7	7	2	1		47	13	T.
		A.																																0	0	A.
New Jersey	51	T.	2	15					1	24	1		17	3		9				1			1					5	18	20	4	2		123	15	T.
		A.																																0	0	A.
New Mexico	31	T.	4	5	3	1	1		2	2	1	2		3	2	1			1		4	3	3	2	3	3	3	4	2	6	4	4		69	25	T.
		A.																																0	0	A.
New York	99	T.	5	12	3			1	6	23	2		16			6				1	3			8				14	20	50	3			173	16	T.
		A.																																0	0	A.
North Carolina	56	T.	1	2	6	3		1	7	8	6	1	2	6	4	2	2	12	16	5			2	5	13	10	16	5	15	14	8	19		191	27	T.
		A.																																0	0	A.
North Dakota	48	T.	1	4		3	1			1	2		2	1		1	1		2	3	1		1					2	3		2	5		36	18	T.
		A.														1			1				1											3	3	A.
Ohio	128	T.	5	4				16	24	17		2			22	7				6			16	3	1	12	12	20	10	22	22	1		222	19	T.
		A.																																0	0	A.
Oklahoma	23	T.	3	4				2		7	6	1	6	3	4			2		10				2			1			1		1		53	15	T.
		A.																																0	0	A.
Oregon	74	T.	2		1							1	1	5	10	10	6							3	9	4						1		53	12	T.
		A.																																0	0	A.
Pennsylvania	91	T.	15	24	2			3	9	20	2		21	7	7	16	1	1	1	10	18	1	3	4		5	4	10	20	28	14			246	26	T.
		A.																																0	0	A.
Rhode Island	7	T.																											3	2	1			6	3	T.
		A.																																0	0	A.
South Carolina	46	T.		1	10	10	4	3	13	12	2	6	4	5	4	2	4	11	8	4			1	9	12	11	10	6	10	5	10	8		185	27	T.
		A.																																0	0	A.
South Dakota	56	T.	1	2	5	2	2							10		3	10	5		1	3	1					1	4	6	3	3	1		63	18	T.
		A.																																0	0	A.
Tennessee	56	T.		7	7		12	9	7				7	10	7	7		7	8					8		7	7	12	8	11	8	9		158	19	T.
		A.																																0	0	A.
Texas	95	T.	8	7	7	10	4		1	2	1	2	11	3	6	7	2			2	6	7	2		1		1	4	4	4	7	1		110	25	T.
		A.																																0	0	A.
Utah	47	T.	2	1	4	2				8	9	11		3	3	6					1		2	4	2					1	2	1		62	18	T.
		A.																																0	0	A.
Vermont	16	T.	1	2	1								1											3					2	2	2			14	8	T.
		A.																																0	0	A.
Virginia	50	T.		10	1		1			12	1		5	11	7	6	1		2		4		1		1	2	13	9	7	8	3	3		108	21	T.
		A.																																0	0	A.
Washington	64	T.														2	3	1				2	1	3	7	6	2			3	5	1		36	12	T.
		A.																																0	0	A.
West Virginia	43	T.	2	1		1		6	2	6	4		4	10	10	3	4	2		5	4		2	1	3	5	7	5	3	10	10	3		113	25	T.
		A.																																0	0	A.
Wisconsin	60	T.	6	2			2	4	6		6	9	1						1			2	16				2	4	5	3	1	2		72	17	T.
		A.																																0	0	A.
Wyoming	31	T.	2	4	2	2					1		2	4	3	4		1	3	1			2	2	3	4	1		2	3		3		49	22	T.
		A.																																0	0	A.
Sums	2,893	T.	202	185	109	104	101	197	248	268	151	237	225	243	226	175	102	141	190	129	88	79	198	186	152	193	189	212	385	374	247	200	....	5,736	....	T.
		A.	1	0	0	0	0	0	1	1	1	0	0	0	0	1	1	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	....	10	....	A.

TABLE VIII.—*Average hourly sunshine (in percentages), June, 1900.*

Stations.	Instrument.	Percentages for each hour of local mean time ending with the respective hour. A. M. 5	6	7	8	9	10	11	Noon	P. M. 1	2	3	4	5	6	7	8	Hours of sunshine. Total. Actual.	Possible.	Percent of possible.	Personal estimate.
																		Hours.	Hours		
Albany, N. Y	T.	33	38	63	72	84	85	84	88	92	86	86	78	77	63	33	33	322.2	459.9	70	51
Atlanta, Ga	T.	13	15	21	28	39	53	62	71	73	66	52	48	28	26	15	3	179.9	431.5	42	17
Atlantic City, N. J	T.	46	47	51	60	81	87	91	91	89	88	81	75	65	54	44	46	313.3	445.9	70	54
Baltimore, Md	T.	37	38	50	64	74	82	82	82	83	86	81	71	60	45	35	32	288.5	445.9	65	41
Binghamton, N. Y	T.	40	41	50	69	78	76	76	82	86	82	77	67	57	44	31	24	286.4	456.2	63	37
Bismarck, N. Dak	P.	50	52	63	63	69	72	73	68	55	67	74	75	73	74	69	68	317.4	475.6	67	62
Boise, Idaho	P.	76	79	86	82	87	91	91	93	94	92	88	89	89	77	64	63	391.1	463.5	84	69
Boston, Mass	T.	35	49	60	69	80	82	87	89	87	85	79	72	62	52	44	32	311.0	456.2	68	56
Buffalo, N. Y	T.	53	54	66	74	82	90	93	95	93	96	96	94	83	77	53	38	362.0	459.9	79	44
Cedar City, Utah	T.	83	83	83	86	91	93	93	95	93	91	90	85	86	72	61	57	376.5	443.1	85	72
Charleston, S. C	T.	23	28	36	39	47	50	45	61	68	64	67	57	43	20	10	7	192.8	428.7	45	43
Chattanooga, Tenn	T.	14	13	9	16	20	32	38	51	50	57	50	34	27	19	10	11	129.7	434.3	30	30
Cheyenne, Wyo	P.	84	79	83	86	90	88	88	86	80	68	69	63	57	60	46	48	333.5	451.9	74	59
Chicago, Ill	T.	43	44	47	55	60	71	70	73	71	74	70	75	69	61	57	57	288.0	456.2	63	55
Cincinnati, Ohio	T.	24	25	33	46	72	79	87	91	90	93	89	88	84	87	66	48	318.1	445.9	71	38
Cleveland, Ohio	T.	20	21	33	41	66	79	86	85	88	81	82	81	65	53	47	43	283.7	456.2	62	56
Columbia, Mo	T.	57	62	63	64	70	76	81	90	89	84	81	74	64	62	61	45	319.7	445.9	72	30
Columbus, Ohio	T.	40	40	37	45	59	65	74	70	71	67	60	55	40	41	30	30	236.5	449.0	53	44
Denver, Colo	P.	47	78	92	92	95	100	94	84	75	68	56	54	57	57	43	27	324.6	449.0	72	66
Des Moines, Iowa	T.	57	57	68	74	82	89	91	92	94	88	84	85	73	54	47	34	339.3	456.2	74	58
Detroit, Mich	T.	27	28	41	70	78	89	88	85	88	84	84	74	70	62	50	48	310.6	456.2	68	51
Dodge, Kans	P.	49	58	74	80	87	92	92	95	88	87	91	93	86	69	53	46	354.6	443.1	80	65
Dubuque, Iowa	T.	50	51	63	76	81	83	94	88	93	96	95	92	92	79	73	76	370.1	456.2	81	68
Eastport, Me	P.	34	38	59	66	75	81	78	73	71	70	67	73	61	58	41	33	289.1	466.7	62	46
Elkins, W. Va	T.	10	10	19	48	66	74	78	77	81	78	70	68	61	42	24	18	242.7	445.9	54	37
Erie, Pa	T.	47	45	46	59	71	84	88	85	84	81	92	84	71	67	60	57	323.8	456.2	71	50
Escanaba, Mich	T.	44	43	43	48	49	54	63	70	71	67	72	63	43	37	38	37	249.6	471.7	53	55
Eureka, Cal	P.	13	13	18	23	34	45	46	53	58	64	60	53	47	42	34	32	184.4	451.9	41	39
Fresno, Cal	T.	83	83	86	89	91	96	99	100	97	98	95	95	91	80	74	74	398.9	440.2	91	83
Galveston, Tex	P.	......	42	73	86	94	88	84	81	76	77	78	81	80	73	37	8	314.3	419.0	75	57
Grand Junction, Colo	P.	100	97	91	96	96	97	90	95	83	78	71	73	68	67	70	83	375.1	445.9	84	65
Harrisburg, Pa	T.	19	20	29	58	66	77	81	85	81	74	69	51	53	30	21	20	244.1	449.0	54	40
Helena, Mont	P.	46	66	76	83	90	87	77	78	81	78	71	71	69	57	55	38	334.4	475.6	70	51
Huron, S. Dak	T.	63	63	63	68	75	77	83	82	78	78	73	70	71	74	81	84	343.0	463.5	74	65
Indianapolis, Ind	T.	43	43	44	47	52	65	71	75	77	69	65	63	46	29	27	26	241.7	449.0	54	41
Jacksonville, Fla	T.	33	50	44	45	61	69	65	62	57	48	45	31	26	20	13	12	190.5	420.9	45	30
Jupiter, Fla	T.	......	42	67	72	78	82	80	77	74	71	62	61	42	28	24	......	255.8	414.3	62	46
Kalispell, Mont	T.	26	38	64	71	90	89	86	82	85	82	77	64	59	49	34	17	303.7	479.8	63	64
Kansas City, Mo	P.	44	49	54	67	77	78	74	67	73	77	73	74	71	62	60	53	299.3	445.9	67	49
Knoxville, Tenn	T.	13	13	15	28	42	54	67	71	73	66	67	60	48	28	18	18	198.4	437.2	45	50
Lexington, Ky	T.	10	16	34	65	74	81	85	90	94	98	90	82	74	56	26	9	291.6	443.1	66	43
Little Rock, Ark	T.	22	22	32	49	69	82	93	92	91	88	76	79	67	54	47	46	287.2	434.3	66	35
Los Angeles, Cal	P.	22	21	22	26	44	52	67	83	86	91	91	91	86	81	80	83	281.8	431.5	65	58
Louisville, Ky	T.	24	23	26	29	45	51	59	63	63	69	62	53	44	31	27	25	198.9	443.9	45	42
Macon, Ga	T.	9	9	36	48	69	77	98	89	83	75	68	64	53	39	12	7	244.9	428.7	57	44
Meridian, Miss	T.	15	13	13	15	33	42	63	59	49	46	38	33	29	9	7	7	135.7	425.8	32	29
Mount Tamalpais, Cal	P.	66	62	62	69	67	73	79	73	81	86	86	85	86	85	76	78	338.0	443.1	76	69
Nashville, Tenn	T.	10	10	29	42	51	65	77	85	82	74	67	62	55	39	19	16	229.6	437.2	53	26
New Haven, Conn	T.	40	48	57	67	78	85	87	90	94	90	85	87	80	66	47	40	329.5	451.9	73	71
New Orleans, La	T.	17	14	17	40	47	55	55	42	52	45	41	40	30	19	17	25	154.4	420.9	37	43
New York, N. Y	T.	26	40	53	64	76	84	85	88	88	88	84	78	67	54	36	26	304.2	451.9	67	44
Norfolk, Va	T.	13	13	15	35	53	62	64	68	69	65	66	66	53	27	13	12	203.1	440.2	46	46
Northfield, Vt	P.	44	51	71	71	72	67	75	65	63	64	62	67	66	64	67	67	301.7	463.5	65	45
Oklahoma, Okla	T.	30	30	36	62	84	88	88	91	91	86	81	80	77	74	45	47	309.0	434.3	71	58
Omaha, Nebr	T.	44	48	74	84	93	94	96	92	92	90	91	89	85	85	69	55	370.4	451.9	82	61
Parkersburg, W. Va	T.	24	24	34	48	60	63	61	65	63	62	59	58	50	37	23	21	217.7	445.9	49	51
Phenix, Ariz	P.	81	80	93	97	96	94	99	99	97	96	92	97	88	88	77	77	395.2	428.7	92	84
Philadelphia, Pa	T.	42	47	55	66	85	89	91	90	88	84	85	78	59	51	47	39	316.6	449.0	71	45
Pittsburg, Pa	T.	14	13	17	37	53	62	78	82	78	65	63	57	22	13	7	6	197.2	451.9	44	54
Pocatello, Idaho	T.	53	54	68	82	93	98	100	99	97	95	86	79	72	65	57	53	364.8	459.9	79	72
Portland, Me	T.	17	43	67	76	83	87	90	93	90	91	82	83	80	66	48	35	335.4	463.5	72	56
Portland, Oreg	T.	27	27	34	39	48	53	56	56	54	53	53	51	48	42	30	28	207.1	471.7	44	41
Pueblo, Colo	T.	77	78	89	99	100	100	100	100	98	95	92	89	78	54	39	43	377.8	443.1	85	69
Raleigh, N. C	T.	40	40	43	62	74	86	87	87	86	77	77	72	64	49	27	25	284.9	437.2	65	47
Rochester, N. Y	T.	50	50	60	65	74	77	76	76	82	83	83	76	70	53	39	37	306.9	459.9	67	63
St. Louis, Mo	T.	10	12	32	58	66	76	89	87	91	83	81	75	63	48	31	27	271.8	445.9	61	40
St. Paul, Minn	P.	60	63	77	84	87	85	87	88	79	75	73	73	71	67	60	56	347.8	466.7	75	56
Salt Lake City, Utah	T.	83	85	94	98	98	96	95	98	99	99	100	93	91	81	72	73	414.1	451.9	92	88
San Diego, Cal	P.	4	4	5	15	32	44	57	70	72	74	74	74	72	60	53	56	215.3	428.7	50	55
San Francisco, Cal	T.	26	27	27	40	49	68	84	93	96	96	93	89	81	62	53	54	296.3	443.1	67	61
Santa Fe, N. Mex	P.	93	95	97	99	97	96	93	83	80	78	68	58	62	59	48	44	345.6	437.2	79	64
Sault Ste. Marie, Mich	T.	30	28	53	61	63	77	75	73	75	75	73	64	64	62	52	40	286.8	471.7	61	57
Savannah, Ga	T.	30	30	30	36	27	47	78	85	79	70	64	41	27	11	10	10	191.9	425.8	45	43
Seattle, Wash	T.	20	25	45	57	59	65	72	70	69	69	68	59	48	39	24	20	242.1	479.8	50	37
Spokane, Wash	T.	43	45	66	74	79	90	89	88	85	84	79	74	68	66	52	46	338.5	479.8	71	42
Tacoma, Wash	T.	16	27	50	51	58	64	68	69	69	67	65	58	51	49	31	23	243.4	475.6	51	40
Tampa, Fla	T.	......	50	50	54	61	61	64	65	65	61	55	47	40	25	20	......	214.2	416.2	51	29
Toledo, Ohio	T.	43	52	73	82	95	97	96	91	93	97	98	93	82	77	67	56	375.7	456.2	82	61
Topeka, Kans	T.	40	40	43	59	76	85	84	87	92	93	90	80	80	64	41	45	315.6	445.9	71	54
Vicksburg, Miss	T.	36	37	35	48	67	82	79	78	80	83	76	64	53	43	37	41	261.1	425.8	61	32
Washington, D. C	P.	27	27	30	48	52	60	64	69	72	75	66	59	61	53	47	45	244.1	445.9	55	48
Wilmington, N. C.*	T.																				
Yankton, S. Dak	T.	30	45	67	78	84	89	93	97	97	96	98	97	91	82	60	44	366.6	459.9	80	57
Basseterre, St. Kitts	T.	......	27	32	56	68	84	83	83	88	80	65	51	20	19	15	......	226.6	394.7	57	40
Bridgetown, Barbados	T.	......	15	42	61	70	80	83	85	83	78	65	54	50	40	36	......	244.1	387.0	63	38
Cienfuegos, Cuba	T.	......	66	67	68	75	81	86	70	81	75	70	58	45	30	30	......	268.5	404.4	66	62
Havana, Cuba	T.	......	73	70	75	67	60	67	73	73	76	75	66	58	41	36	......	265.5	406.8	65	43
Kingston, Jamaica, W. I	T.	......	37	43	73	83	93	89	83	79	71	48	36	30	16	14	......	234.2	396.0	59	41
Port of Spain, Trinidad, W. I	T.	......	43	43	52	57	63	52	50	54	43	37	35	31	37	36	......	175.5	384.0	46	35
Puerto Principe, Cuba	T.	......	50	49	49	59	69	72	73	70	61	38	37	21	23	22	......	200.8	401.8	50	42
Roseau, Dominica, W. I	T.	......	7	8	32	55	64	75	78	78	72	72	61	39	24	19	......	200.6	390.0	51	31
San Juan, Porto Rico	T.	......	7	34	58	75	79	77	75	73	62	60	55	40	30	29	......	222.0	396.0	56	44
Santiago de Cuba, Cuba	T.	......	77	76	69	67	74	69	68	84	68	56	36	17	18	7	......	227.8	400.4	57	40
Santo Domingo, Santo Domingo	T.	......	20	20	25	52	66	62	62	63	60	53	33	22	17	17	......	167.4	396.0	42	39
Willemstad, Curacao	T.	......	7	7	18	47	59	69	65	67	76	79	67	46	31	30	......	194.1	384.2	51	50

* Record incomplete.

TABLE IX.—*Accumulated amounts of precipitation for each 5 minutes, for storms in which the rate of fall equaled or exceeded* 0.25 *in any 5 minutes, or* 0.75 *in 1 hour during June,* 1900, *at all stations furnished with self-registering gages.*

Stations.	Date.	Total duration. From—	Total duration. To—	Total am't of precipitation.	Excessive rate. Began—	Excessive rate. Ended—	Amount before excessive began.	5 min.	10 min.	15 min.	20 min.	25 min.	30 min.	35 min.	40 min.	45 min.	50 min.	60 min.	80 min.	100 min.	120 min.
	1	2	3	4	5	6	7														
Albany, N. Y.	11	2.50 p.m.	4.15 p.m.	1.12	3.02 p.m.	3.27 p.m.	0.04	0.21	0.26	0.38	0.63	0.86	0.89	0.91	0.93						
Do	28	4.27 p.m.	5.20 p.m.	0.66	4.33 p.m.	4.46 p.m.	T.	0.25	0.51	0.63	0.65	0.66									
Atlanta, Ga.	4	3.43 p.m.	5.20 p.m.	0.55	3.55 p.m.	4.05 p.m.	0.02	0.32	0.49												
Do	24	1.37 p.m.	2.50 p.m.	0.98	1.43 p.m.	2.00 p.m.	T.	*	*	0.82											
Atlantic City, N. J.	16-17			1.76														0.25			
Baltimore, Md.	14	4.10 p.m.	8.10 p.m.	0.62	4.20 p.m.	4.40 p.m.	T.	0.04	0.10	0.36	0.52	0.58									
Binghamton, N. Y.	8			0.34														0.28			
Bismarck, N. Dak.	18			1.48	*	*												0.84			
Boise, Idaho	13			0.08														0.08			
Boston, Mass.	22-23			0.93														0.21			
Buffalo, N. Y.	1-2			0.46														0.14			
Cairo, Ill.	7	7.14 a.m.	9.35 a.m.	1.56	7.27 a.m.	8.17 a.m.	T.	0.07	0.15	0.30	0.50	0.66	0.87	1.13	1.36	1.43	1.50				
Do	28	7.05 a.m.	8.50 a.m.	0.82	7.06 a.m.	7.36 a.m.	T.	0.08	0.22	0.37	0.49	0.60	0.70								
Charleston, S. C.	22	5.55 a.m.	9.42 a.m.	2.77	8.25 a.m.	9.22 a.m.	0.36	0.08	0.16	0.35	0.58	0.91	1.19	1.38	1.55	1.84	2.17	2.41			
Chicago, Ill.	6			0.63														0.32			
Cincinnati, Ohio	25			0.22														0.21			
Cleveland, Ohio	7			0.65														0.48			
Columbia, Mo.	12	9.37 p.m.	D. N.	1.13	9.40 p.m.	10.05 p.m.	T.	0.21	0.54	0.74	0.84	0.87	0.89	0.93	0.99						
Do	23	7.29 p.m.	8.55 p.m.	0.96	7.29 p.m.	7.49 p.m.	0.00	0.31	0.52	0.71	0.92										
Columbus, Ohio	29			0.59														0.59			
Denver, Colo.	2	5.02 p.m.	5.45 p.m.	1.17	5.15 p.m.	5.45 p.m.	T.	0.25	0.50	0.75	1.00	1.15	1.16	1.17							
Des Moines, Iowa	27	3.55 a.m.	7.50 a.m.	0.89	6.30 a.m.	7.00 a.m.	0.03	0.27	0.57	0.85											
Detroit, Mich.	7	4.25 p.m.	6.45 p.m.	1.46	4.35 p.m.	5.10 p.m.	0.01	0.07	0.25	0.30	0.45	0.63	1.02	1.32	1.37	1.40					
Do	13	4.45 p.m.	5.15 p.m.	0.84	4.50 p.m.	5.10 p.m.	0.05	0.19	0.45	0.66	0.77										
Dodge, Kans	12			0.63														0.40			
Duluth, Minn.	6			0.58														0.48			
Eastport, Me.	29	6.46 a.m.	9.18 a.m.	0.80	6.46 a.m.	7.01 a.m.	0.00	0.17	0.35	0.50	0.55										
Elkins, W. Va.	12	3.14 p.m.	4.30 p.m.	0.75	3.32 p.m.	4.00 p.m.	0.02	0.23	0.42	0.47	0.55	0.64	0.69								
Erie, Pa.	27	7.23 p.m.	8.25 p.m.	1.76	7.23 p.m.	7.57 p.m.	0.00	0.15	0.38	0.65	0.87	1.05	1.54	1.68							
Escanaba, Mich.	26			0.22					0.22												
Evansville, Ind	14-15	7.45 p.m.	1.30 p.m.	4.69	9.00 a.m.	9.20 a.m.	3.27	0.12	0.28	0.44	0.56	0.59	0.62	0.64	0.68	0.71	0.74	0.83	1.15	1.31	1.36
Do	29	10.40 p.m.	D. N.	1.65	10.40 p.m.	11.35 p.m.	0.00	0.17	0.37	0.60	0.89	1.00	1.05	1.14	1.23	1.39	1.49	1.60			
Fort Worth, Tex.	2			0.59														0.54			
Fresno, Cal.	8			T.																	
Galveston, Tex.	19	11.31 a.m.	8.01 p.m.	2.32	6.30 p.m.	7.10 p.m.	1.07	0.08	0.12	0.20	0.33	0.49	0.82	1.05	1.10	1.11					
Do	20	D. N.	D. N.	1.47	4.40 a.m.	5.40 a.m.	0.03	0.01	0.07	0.12	0.39	0.62	0.81	0.91	0.93	1.01	1.15	1.30	1.33	1.44	
Grand Junction, Colo.	21			0.02						0.02											
Harrisburg, Pa	11	6.56 p.m.	7.45 p.m.	0.59	7.10 p.m.	7.35 p.m.	0.04	0.16	0.30	0.39	0.47	0.51									
Hatteras, N. C.	24	11.35 a.m.	1.10 p.m.	1.04	11.36 a.m.	1.05 p.m.	T.	0.13	0.39	0.54	0.55	0.57	0.58	0.59	0.60	0.61	0.61	0.69	0.97	1.04	
Huron, S. Dak.	12	3.13 p.m.	5.10 p.m.	1.18	4.15 p.m.	4.35 p.m.	T.	0.30	0.58	0.77	1.14	1.18									
Indianapolis, Ind.	26	3.05 p.m.	3.50 p.m.	0.77	3.25 p.m.	3.40 p.m.	0.01	0.09	0.37	0.74	0.75	0.76									
Jacksonville, Fla.	5	12.10 a.m.	4.15 p.m.	1.62	12.49 p.m.	1.10 p.m.	0.33	0.28	0.68	0.94	1.04	1.10	1.15	1.19	1.21	1.22	1.23				
Do	21	11.20 a.m.	12.10 p.m.	1.17	11.39 a.m.	12.03 p.m.	0.15	0.20	0.45	0.65	0.96	1.02									
Jupiter, Fla.	8			0.74														0.71			
Kalispell, Mont	16-17			0.67														0.13			
Kansas City, Mo.	21	10.12 p.m.	11.50 p.m.	0.72	11.10 p.m.	11.25 p.m.	0.04	0.21	0.53	0.64	0.68										
Key West, Fla.	13	12.15 p.m.	4.25 p.m.	3.30	12.17 p.m.	1.30 p.m.	T.	0.09	0.17	0.31	0.46	0.80	1.04	1.39	1.81	1.99	2.24	2.68	2.83		
Knoxville, Tenn	27	12.20 p.m.	2.45 p.m.	1.86	1.50 p.m.	2.10 p.m.	0.48	0.08	0.33	0.70	0.86	0.93	1.05	1.11	1.18	1.33	1.38				
Lexington, Ky.	27			0.20						0.20											
Lincoln, Nebr.	16-17	10.42 p.m.	D. N.	0.91	4.04 a.m.	5.03 a.m.	0.14	0.15	0.18	0.19	0.20	0.33	0.43	0.47	0.48	0.50	0.68	0.77			
Little Rock, Ark.	17	5.02 p.m.	6.45 p.m.	0.81	5.07 p.m.	5.32 p.m.	T.	0.14	0.39	0.51	0.63	0.76	0.78	0.81							
Do	26	D. N.	D. N.	0.65	2.48 a.m.	3.08 a.m.	T.	0.05	0.18	0.33	0.65										
Los Angeles, Cal.	8			T.																	
Louisville, Ky.	29	8.58 p.m.	11.15 p.m.	0.52	9.03 p.m.	9.23 p.m.	T.	0.08	0.30	0.45	0.50										
Macon, Ga.	15	6.03 p.m.	6.18 p.m.	0.68	6.05 p.m.	6.13 p.m.	T.	0.43	0.67	0.68											
Do	17	10.25 p.m.	11.14 p.m.	0.78	10.39 p.m.	11.11 p.m.	T.	0.12	0.17	0.35	0.51	0.63	0.69	0.73							
Memphis, Tenn.	13-14	9.35 p.m.	1.10 p.m.	5.05	6.30 a.m.	7.20 a.m.	1.52	0.04	0.09	0.13	0.17	0.22	0.30	0.41	0.45	0.48	0.56				
					7.20 a.m.	8.10 a.m.		0.66	0.76	0.86	0.95	1.00	1.03	1.08	1.12	1.16	1.20				
					8.10 a.m.	9.00 a.m.		1.26	1.35	1.47	1.58	1.69	1.85	1.96	2.06	2.12	2.20				
					9.00 a.m.	11.00 a.m.		2.30	2.37	2.45	2.50	2.56	2.67	2.78	2.87	2.95	2.99	3.03	3.10	3.16	3.22
Meridian, Miss.	2	6.38 p.m.	8.20 p.m.	2.76	6.40 p.m.	7.27 p.m.	0.01	0.21	0.44	0.70	0.93	1.28	1.61	1.83	2.10	2.59	2.69	2.72	2.73	2.74	
Do	8	7.45 a.m.	9.56 a.m.	2.63	8.07 a.m.	9.17 a.m.	0.24	0.32	0.42	0.63	0.84	0.97	1.06	1.17	1.42	1.60	1.70	1.94	2.37		
Do	20-21	3.15 p.m.	8.35 a.m.	3.06	3.45 p.m.	5.45 p.m.	0.13	0.02	0.06	0.10	0.16	0.21	0.24	0.26	0.29	0.36	0.45	0.58	0.87	1.13	1.66
Do	23	5.31 p.m.	7.30 p.m.	2.25	5.44 p.m.	6.31 p.m.	0.06	0.14	0.38	0.63	0.99	1.29	1.51	1.72	1.85	1.98					
Do	28	3.35 p.m.	5.15 p.m.	1.54	3.35 p.m.	4.15 p.m.	0.00	0.12	0.29	0.57	0.89	1.09	1.26	1.45	1.52						
Milwaukee, Wis.	21	4.25 p.m.	6.25 p.m.	0.60	4.41 p.m.	4.49 p.m.	0.02	0.20	0.34	0.43	0.46	0.48	0.51								
Montgomery, Ala	5	6.20 p.m.	6.52 p.m.	1.02	6.25 p.m.	6.42 p.m.	T.	0.27	0.77	0.96	1.01	1.02									
Nantucket, Mass.	14			0.63														0.18			
Nashville, Tenn.	7	1.52 p.m.	3.50 p.m.	1.36	2.17 p.m.	2.45 p.m.	T.	0.18	0.59	0.83	1.08	1.19	1.23	1.24	1.30	1.30					
Do	28	7.35 p.m.	11.55 p.m.	1.73	7.55 p.m.	8.22 p.m.	0.18	0.19	0.24	0.74	1.04	1.26	1.31	1.32							
New Orleans, La.	20	4.25 p.m.	7.25 p.m.	1.30	4.37 p.m.	5.10 p.m.	T.	0.13	0.23	0.28	0.38	0.80	1.04	1.12	1.14	1.17	1.20	1.21			
New York, N. Y.	8	12.21 p.m.	7.57 p.m.	1.72	5.52 p.m.	6.42 p.m.	0.09	0.16	0.37	0.61	0.71	0.81	0.86	0.96	1.09	1.33	1.52	1.55	1.58	1.61	1.63
Norfolk, Va.	25	4.22 p.m.	5.30 p.m.	0.82	4.23 p.m.	4.38 p.m.	T.	0.27	0.60	0.80	0.81										
Northfield, Vt.	1	2.25 p.m.	3.35 p.m.	0.81	2.39 p.m.	3.07 p.m.	0.05	0.10	0.15	0.28	0.40	0.58	0.63	0.65	0.68	0.70	0.75	0.76			
Oklahoma, Okla.	18			0.52														0.52			
Omaha, Nebr.	16	10.10 a.m.	3.30 p.m.	2.22	1.25 p.m.	3.20 p.m.	0.02	0.12	0.30	0.45	0.73	0.88	0.95	0.96	0.97	0.98	0.99	0.99	1.34	1.47	2.19
Parkersburg, W. Va.	24	9.00 p.m.	11.30 p.m.	0.56	10.29 p.m.	10.40 p.m.	0.02	0.18	0.49	0.53	0.54										
Philadelphia, Pa	16-17			1.13														0.18			
Pittsburg, Pa.	14	1.20 a.m.	5.45 a.m.	0.94	2.33 a.m.	3.04 a.m.	0.23	0.11	0.13	0.23	0.36	0.57	0.58	0.69	0.71						
Pocatello, Idaho	14			0.07											0.07						
Portland, Me.	14			0.54														0.32			
Portland, Oreg.	19			0.45														0.07			
Pueblo, Colo.	3			0.20						0.20											
Raleigh, N. C.	16	1.40 p.m.	2.25 p.m.	0.84	1.45 p.m.	2.20 p.m.	T.	0.23	0.41	0.56	0.66	0.76	0.80	0.84							
Do	17	3.40 p.m.	D. N.	1.90	3.44 p.m.	4.04 p.m.	T.	0.32	0.69	0.80	0.89	0.90									
Do	23	3.45 a.m.	9.15 a.m.	1.99	7.12 a.m.	7.42 a.m.	0.43	0.30	0.60	0.75	0.80	0.95	1.10	1.16	1.18	1.18	1.23	1.42			
Do	24	8.25 a.m.	12.15 p.m.	1.04	9.45 a.m.	10.30 a.m.	0.07	0.09	0.19	0.30	0.44	0.46	0.58	0.75	0.86	0.90					
Richmond, Va.	17			1.19														0.52			
Rochester, N. Y.	28	3.30 p.m.	5.20 p.m.	1.10	3.36 p.m.	3.53 p.m.	T.	0.17†	0.31†	0.46†	0.56†	0.56†									
St. Louis, Mo.	13	1.23 a.m.	2.30 a.m.	1.28	1.29 a.m.	1.59 a.m.	T.	0.60	0.90	1.00	1.09	1.20	1.28								
St. Paul, Minn	9	8.12 a.m.	1.20 p.m.	0.52	1.02 p.m.	1.07 p.m.	0.11	0.41													
Do	12-13	10.50 p.m.	D. N.	0.84	11.12 p.m.	11.22 p.m.	0.01	0.19	0.39	0.40	0.49	0.50									
Salt Lake City, Utah	8			0.04								0.04									
San Diego, Cal.	12			0.05											0.05						
Sandusky, Ohio	13	5.45 p.m.	6.45 p.m.	0.66	5.46 p.m.	6.11 p.m.	T.	0.08	0.24	0.49	0.57	0.61	0.62								
Do	21	2.16 p.m.	5.15 p.m.	1.06	2.16 p.m.	2.30 p.m.	0.00	0.12	0.34	0.43											
					4.50 p.m.	5.05 p.m.	0.19	0.07	0.25	0.43	0.44										
San Francisco, Cal.	15			0.04														0.08			
Savannah, Ga.	24	D. N.	D. N.	1.39	1.35 a.m.	2.10 a.m.	0.13	0.15	0.28	0.48	0.78	0.97	1.04	1.14	1.17	1.18	1.19				
Seattle, Wash.	19-21			1.67														0.21			

TABLE IX.—*Accumulated amounts of precipitation for each 5 minutes, etc.*—Continued.

Stations.	Date.	Total duration.		Total am't of precipitation.	Excessive rate.		Amount before excessive began.	Depths of precipitation (in inches) during periods of time as indicated.													
		From—	To—		Began—	Ended—		5 min.	10 min.	15 min.	20 min.	25 min.	30 min.	35 min.	40 min.	45 min.	50 min.	60 min.	80 min.	100 min.	120 min.
	1	2	3	4	5	6	7														
Spokane, Wash.	25			0.22														0.17			
Tampa, Fla.	12	2.57 p.m.	7.05 p.m.	2.53	3.00 p.m.	3.25 p.m.	T.	0.50	1.50	1.90	2.15	2.35	2.40	2.45							
Toledo, Ohio	22			0.49														0.46			
Topeka, Kans.	27-28	11.24 p.m.	12.35 a.m.	0.69	11.55 p.m.	12.05 a.m.	0.15	0.15	0.41	0.43											
Vicksburg, Miss.	1	D. N	10.40 a.m.	2.36	7.46 a.m.	8.16 a.m.	0.65	0.21	0.45	0.65	0.74	1.01	1.14	1.18	1.24	1.27	1.32	1.43	1.60	1.63	1.65
Do	23	2.25 a.m.	5.45 a.m.	2.21	4.44 a.m.	5.44 a.m.	0.53	0.10	0.25	0.34	0.50	0.72	0.90	1.14	1.28	1.42	1.56	1.67			
Washington, D. C.	2	2.25 p.m.	6.30 p.m.	3.48	2.49 p.m.	3.39 p.m.	0.04	0.35	0.51	0.66	0.91	1.15	1.18	1.51	1.66	1.90	2.40				
					3.39 p.m.	4.00 p.m.		2.45	2.65	3.00	3.03	3.04	3.05	3.06	3.08	3.11	3.13	3.17	3.24	3.33	3.38
Do	8	1.35 p.m.	2.58 p.m.	2.83	1.49 p.m.	2.39 p.m.	T.	0.15	0.28	0.53	0.79	1.21	1.50	1.55	1.64	1.92	2.16				
					2.39 p.m.	2.56 p.m.		2.45	2.65	2.83											
Wilmington, N. C.	17	8.40 a.m.	9.55 a.m.	0.61	9.18 a.m.	9.33 a.m.	0.06	0.16	0.26	0.34	0.44	0.44	0.55								
Do	18	12.15 a.m.	1.35 a.m.	0.93	12.52 a.m.	1.27 a.m.	0.10	0.09	0.12	0.25	0.48	0.60	0.68	0.75	0.79	0.83					
Yankton, S. Dak.	16			0.71														0.36			
Basseterre, St. Kitts.	27			0.88														0.80			
Bridgetown, Barbados	27			0.31														0.29			
Cienfuegos, Cuba	20	1.20 p.m.	2.20 p.m.	0.75	1.40 p.m.	2.00 p.m.	0.02	0.18	0.43	0.63	0.72										
Do	30	1.40 p.m.	6.15 p.m.	1.68	2.02 p.m.	2.37 p.m.	T.	0.14	0.42	0.72	0.95	1.15	1.30	1.40							
Havana, Cuba	14	1.24 p.m.	4.45 p.m.	0.86	1.35 p.m.	1.55 p.m.	0.03	0.12	0.32	0.38	0.50	0.51	0.54								
Kingston, Jamaica	8			0.54														0.54			
Port of Spain, Trin.	1	8.20 a.m.	12.15 p.m.	1.62	8.22 a.m.	8.47 a.m.	T.	0.26	0.58	0.83	0.96	1.10	1.11								
Do	8	12.50 p.m.	2.20 p.m.	1.98	1.31 p.m.	1.56 p.m.	0.04	0.37	0.72	1.16	1.53	1.64	1.70	1.74	1.78	1.84	1.89	1.94			
Do	19	2.45 a.m.	4.15 a.m.	1.00	3.10 a.m.	3.35 a.m.	0.10	0.17	0.44	0.60	0.65	0.74	0.79	0.82							
Puerto Principe, Cuba	9	4.20 p.m.	5.00 p.m.	0.61	4.36 p.m.	4.51 p.m.	0.01	0.14	0.34	0.58	0.60										
Do	17	5.46 p.m.	7.50 p.m.	0.85	5.50 p.m.	6.20 p.m.	T.	0.19	0.29	0.34	0.43	0.66	0.71	0.74							
Do	18	8.20 p.m.	9.15 p.m.	0.68	8.27 p.m.	8.40 p.m.	T.	0.24	0.55	0.65	0.66										
Do	19	5.30 p.m.	10.15 p.m.	1.31	6.34 p.m.	6.54 p.m.	0.04	0.35	0.64	0.83	0.91	1.01	1.03								
Do	23	5.41 p.m.	6.15 p.m.	1.02	5.48 p.m.	6.06 p.m.	0.03	0.10	0.51	0.88	0.99										
Roseau, Dominica	14	8.38 p.m.	D. N.	0.55	8.51 p.m.	9.01 p.m.	0.08	0.27	0.46	0.47											
San Juan, Porto Rico.	2	11.33 a.m.	3.45 p.m.	1.30	11.37 a.m.	12.12 p.m.	T.	0.18	0.48	0.78	0.99	1.11	1.15	1.19							
Do	16	9.45 a.m.	2.20 p.m.	1.15	10.35 a.m.	10.45 a.m.	0.08	0.15	0.30	0.36	0.37										
					11.15 a.m.	11.30 a.m.	0.14	0.12	0.37	0.53	0.56										
Santiago de Cuba	1	1.30 p.m.	3.15 p.m.	1.82	1.32 p.m.	1.52 p.m.	T.	0.52	1.08	1.34	1.67	1.71	1.72	1.73							
Santo Domingo, S. D.	9	7.25 p.m.	10.10 p.m.	1.38	8.00 p.m.	8.42 p.m.	0.23	0.10	0.30	0.58	0.80	0.89	0.95	0.96	1.05	1.12	1.13				
Willemstad, Curaçao	1			0.07														0.03			

* Self-register not working. † Partly estimated.

TABLE X.—*Data furnished by the Canadian Meteorological Service, June, 1900.*

Stations.	Pressure.			Temperature.				Precipitation.		
	Mean not reduced.	Mean reduced.	Departure from normal.	Mean.	Departure from normal.	Mean maximum.	Mean minimum.	Total.	Departure from normal.	Depth of snow.
	Ins.	*Ins.*	*Ins.*	°	°	°	°	*Ins.*	*Ins.*	*Ins.*
St. Johns, N. F	29.67	29.82	—.16	51.4	— 0.2	60.3	42.6	3.39	—0.19	
Sydney, C. B. I	29.86	29.90	—.03	55.8	+ 0.4	66.7	45.0	2.44	—1.25	
Halifax, N. S	29.81	29.92	—.02	59.3	+ 1.6	69.9	48.8	2.65	—1.25	
Grand Manan, N. B	29.86	29.91	—.05	57.5	+ 1.3	66.0	49.0	3.57	+1.27	
Yarmouth, N. S	29.86	29.94	+.01	56.3	+ 1.3	64.5	48.1	3.01	+0.87	
Charlottet'n, P. E. I	29.84	29.88	—.06	59.7	+ 2.3	69.3	50.1	2.25	—0.50	
Chatham, N. B	29.84	29.86	—.05	60.3	+ 0.3	71.5	49.2	3.35	—0.94	
Father Point, Que	29.80	29.83	—.04	53.1	+ 0.1	63.3	43.0	2.32	—0.37	
Quebec, Que	29.55	29.87	—.02	62.1	+ 0.9	72.7	51.4	3.97	+0.70	
Montreal, Que	29.68	29.88	—.02	65.7	+ 0.8	74.9	56.5	4.37	+1.18	
Bissett, Ont	29.33	29.93	+0.3	60.8	— 0.6	76.9	44.7	3.33	+0.58	
Ottawa, Ont	29.55	29.86	—.04	66.6	+ 1.3	77.8	55.5	3.21	....	
Kingston, Ont	29.61	29.92	—.02	64.0	+ 0.6	72.7	55.2	2.08	—0.32	
Toronto, Ont	29.57	29.94	—.02	65.6	+ 2.2	76.5	54.6	2.43	—0.29	
White River, Ont	28.63	29.96	.00	56.1	— 2.6	71.3	41.0	1.99	+0.02	
Port Stanley, Ont	29.33	29.96	+.02	64.3	+ 0.4	75.5	53.1	2.17	—0.85	
Saugeen, Ont	29.25	29.95	+.01	60.5	+ 0.1	70.5	50.4	1.33	—1.04	
Parry Sound, Ont	29.25	29.93	.00	62.7	+ 1.0	74.4	51.0	2.07	—0.14	
Port Arthur, Ont	29.23	29.91	—.01	57.9	+ 1.5	69.6	46.3	2.48	—0.33	
Winnipeg, Man	29.08	29.88	+.02	66.3	+ 4.1	81.4	51.2	1.85	—1.99	
Minnedosa, Man	28.11	29.86	+.03	63.3	+ 3.7	78.5	48.1	0.70	—3.09	
Qu'Appelle, Assin	27.62	29.80	—.03	63.1	+ 3.2	76.7	49.5	1.19	—2.16	
Medicine Hat, Assin	27.56	29.78	—.02	67.0	+ 5.0	81.5	52.5	2.26	—0.77	
Swift Current, Assin	27.31	29.80	—.03	65.8	+ 5.8	79.4	52.2	1.38	—2.17	
Calgary, Alberta	26.32	29.77	—.09	57.6	+ 1.6	71.4	43.8	3.56	+1.22	
Banff, Alberta	25.30	29.84	......	55.2	+ 3.7	68.8	41.6	4.65	+1.32	
Edmonton, Alberta	27.51	29.75	—.11	59.4	+ 2.5	70.7	48.0	3.77	+1.58	
Prince Albert, Sask	28.28	29.78	......	60.0	+ 2.3	71.8	48.3	1.73	....	
Battleford, Sask	28.02	29.72	......	60.9	+ 1.4	71.9	49.9	3.21	+0.03	
Kamloops, B. C	28.66	29.91	......	63.8	0.0	73.5	54.0	1.63	+0.14	
Victoria, B. C	29.88	29.97	......	57.9	+ 1.4	64.6	51.3	1.61	......	
Barkerville, N. W. T.	25.59	29.82	......	53.0	+ 2.3	66.6	39.3	5.91	+2.84	
Hamilton, Bermuda	....	....	......	......	....	......	....	.....	.....	....

TABLE XI.—*Heights of rivers referred to zeros of gages, June, 1900.*

Stations.	Distance to mouth of river.	Danger line on gage.	Highest water.		Lowest water.		Mean stage.	Monthly range.
			Height.	Date.	Height.	Date.		
Mississippi River.	*Miles.*	*Feet.*	*Feet.*		*Feet.*		*Feet.*	*Feet.*
St. Paul, Minn	1,954	14	3.2	1	0.8	30	1.8	2.4
Reeds Landing, Minn	1,884	12	1.7	1-3, 10-12	0.2	30	1.1	1.5
La Crosse, Wis	1,819	12	3.2	1	1.5	30	2.4	1.7
Prairie du Chien	1,759	18	3.0	1	1.3	28	2.1	1.7
Dubuque, Iowa	1,699	15	3.2	1,2	1.4	30	2.3	1.8
Leclaire, Iowa	1,609	10	2.2	1	0.7	30	1.3	1.5
Davenport, Iowa	1,598	15	3.2	1	1.4	28-30	2.2	1.8
Muscatine, Iowa	1,562	16	4.3	1	1.9	29,30	2.9	2.4
Galland, Iowa	1,472	8	2.0	1	0.9	30	1.0	1.1
Keokuk, Iowa	1,463	15	3.2	1	1.1	30	2.0	2.1
Hannibal, Mo	1,402	13	4.6	1	2.4	30	3.2	2.2
Grafton, Ill	1,306	23	7.0	1	4.9	30	5.7	2.1
St. Louis, Mo	1,264	30	14.7	24	10.5	12	12.4	4.2
Chester, Ill	1,189	36	11.8	25	8.2	13	9.8	3.6
Memphis, Tenn	843	33	21.4	30	8.8	1,2	14.5	12.6
Helena, Ark	767	42	28.7	30	15.7	1,2	22.3	13.0
Arkansas City, Ark	635	42	28.9	30	18.6	2,3	24.6	10.3
Greenville, Miss	595	42	23.7	23, 24, 30	14.8	2	20.0	8.9
Vicksburg, Miss	474	45	28.1	25	17.5	3-5	22.9	10.6
New Orleans, La	108	16	9.8	29, 30	6.5	9	8.1	3.3
Missouri River.								
Bismarck, N. Dak.	1,309	14	8.5	3	6.8	1, 26, 27	7.5	1.7
Pierre, S. Dak.	1,114	14	8.8	5	6.8	1,2	7.8	2.0
Sioux City, Iowa	784	19	12.0	17	9.9	2-6	10.8	2.1
Omaha, Nebr	669	18	11.6	19	9.5	7	10.6	2.1
Plattsmouth, Nebr	641	17	9.1	18	6.7	30	7.8	2.4
St. Joseph, Mo	481	10	8.2	19	5.5	7	6.4	2.7
Kansas City, Mo	388	21	17.8	20	13.4	9	15.0	4.4
Boonville, Mo	199	20	14.1	22	11.3	5, 11	12.3	2.8
Hermann, Mo	103	24	14.1	22	16.5	11, 12	11.9	3.6
Des Moines River.								
Des Moines, Iowa	150	19	3.8	20	2.7	8, 9, 17, 18	3.1	1.1
Illinois River.								
Peoria, Ill	135	14	8.9	5	6.8	24	7.9	2.1
Beardstown, Ill	70	12	8.0	1-8	7.1	25-30	7.6	0.9
Osage River.								
Bagnell, Mo	70	28	4.6	21, 22	2.1	9, 10	2.9	2.5
Gasconade River.								
Arlington, Mo.	58	16	1.8	14	— 0.6	4-7, 10, 11	0.1	2.4
Youghiogheny River.								
Confluence, Pa	59	10	5.8	17	1.0	1,2	2.1	4.8
West Newton, Pa	15	23	4.9	18	0.6	7	1.5	4.3
Allegheny River.								
Warren, Pa	177	14	1.0	3,4	0.3	29, 30	0.7	0.7
Oil City, Pa	123	13	1.7	5	0.5	25, 26	1.0	1.2
Parker, Pa	73	20	2.2	4,5	0.3	26, 27	1.1	1.9
Monongahela River.								
Weston, W. Va.	161	18	5.2	30	—1.0	7	0.0	6.2
Fairmont, W. Va	119	25	7.4	17	0.8	14, 27, 28	1.8	6.6
Greensboro, Pa	81	18	13.0	18	7.0	1, 12, 13	8.1	6.0
Lock No. 4, Pa	40	28	16.0	18	6.6	27, 28	8.6	9.4
Conemaugh River.								
Johnstown, Pa.	64	7	2.9	15	1.5	12, 13	2.2	1.4
Red Bank Creek.								
Brookville, Pa	35	8	1.4	1-9	0.4	16-30	0.8	1.0
Beaver River.								
Ellwood Junction, Pa	10	14	3.7	3	2.0	10-13, 26-30	2.3	1.7
Great Kanawha River.								
Charleston, W. Va	61	30	10.0	17	4.1	24	7.0	5.9
New River.								
Hinton, W. Va	95	14	5.5	18	1.6	10, 11	2.6	3.9
Cheat River.								
Rowlesburg, W. Va	36	14	10.0	17	2.0	11-13	3.5	8.0
Ohio River.								
Pittsburg, Pa	966	22	8.0	18	3.0	22	5.9	5.0
Davis Island Dam, Pa	960	25	8.4	19	3.1	26	4.6	5.3
Wheeling, W. Va	875	36	9.5	19	3.3	27, 28	5.3	6.2
Parkersburg, W. Va	785	36	9.3	21	4.6	29	6.4	4.7
Point Pleasant, W. Va	703	39	11.7	19	3.6	27	6.0	8.1
Huntington, W. Va	660	50	15.8	19	7.0	4	9.4	8.8
Catlettsburg, Ky	651	50	16.0	19	4.4	4	8.1	11.6
Portsmouth, Ohio	612	50	16.3	20	6.8	4,5	9.2	9.5
Cincinnati, Ohio	499	50	16.8	21	8.4	16-18	10.8	8.4
Madison, Ind	413	46	14.3	22	8.0	18	10.3	6.3
Louisville, Ky	367	28	8.1	23	5.0	17-19	6.2	3.1
Evansville, Ind	184	35	14.2	17	8.9	14	11.7	5.3
Paducah, Ky	47	40	25.5	30	7.6	1	16.1	17.9
Cairo, Ill	1,073	45	31.0	30	16.8	1	23.1	14.2
Muskingum River.								
Zanesville, Ohio.	70	20	7.9	16	5.9	24, 25	6.4	2.0
Scioto River.								
Columbus, Ohio	110	17	2.9	6-17	2.0	1, 2, 21-23, 25-30	2.5	0.9
Miami River.								
Dayton, Ohio	69	18	3.5	3	1.0	19-23	1.7	2.5
Wabash River.								
Mount Carmel, Ill.	50	15	14.0	7,8	4.4	1	10.1	9.6
Licking River.								
Falmouth, Ky.	30	25	3.0	1	0.7	23	1.6	2.3
Clinch River.								
Speers Ferry, Va	156	20	4.6	18	—0.2	11	0.8	4.8
Clinton, Tenn.	46	25	11.0	20	3.0	11, 12	5.0	8.0
Tennessee River.								
Knoxville, Tenn	614	29	7.8	18	1.1	2-4	3.1	6.7
Kingston, Tenn	534	25	6.0	20	1.6	1-3	3.4	4.4
Chattanooga, Tenn	430	33	9.3	20	2.8	1,2	6.0	6.5
Tennessee River—Con'd.	*Miles.*	*Feet.*	*Feet.*		*Feet.*		*Feet.*	*Feet.*
Bridgeport, Ala	390	24	6.9	20, 21	1.2	4	4.2	5.7
Florence, Ala	220	16	13.4	28	2.4	1	6.4	11.0
Riverton, Ala	190	25	23.4	28	2.5	1	9.5	20.9
Johnsonville, Tenn	94	21	29.5	30	4.5	1,2	12.2	25.0
Cumberland River.								
Burnside, Ky	434	50	11.0	29	1.7	1-6	4.8	9.3
Carthage, Tenn	257	40	15.5	29, 30	1.7	1	6.0	13.8
Nashville, Tenn	175	40	23.6	30	2.4	1	9.9	21.2
Arkansas River.								
Wichita, Kans	736	10	7.2	8	3.9	29	5.7	3.3
Webbers Falls, Ind. T	413	23	9.9	1	3.7	28-30	5.3	6.2
Fort Smith, Ark	351	22	10.6	2,3	4.8	29	6.9	5.8
Dardanelle, Ark	256	21	10.8	4	4.0	30	7.0	6.8
Little Rock, Ark	176	23	11.7	5	6.0	30	8.[illegible]	5.7
White River.								
Newport, Ark	150	26	8.2	19	5.2	23	6.4	3.0
Yazoo River.								
Yazoo City, Miss	80	25	21.0	30	8.0	1	15.6	13.0
Red River.								
Arthur City, Tex	688	27	17.4	1	6.5	30	9.9	10.9
Fulton, Ark	565	28	19.7	4	9.0	30	13.5	10.7
Shreveport, La	449	29	13.5	5,6	7.7	30	10.4	5.8
Alexandria, La	139	33	13.0	8	7.1	22	9.9	5.9
Ouachita River.								
Camden, Ark	340	39	20.5	11	7.2	1	14.4	13.3
Monroe, La	100	40	22.4	30	7.0	3	16.1	15.4
Atchafalaya River.								
Melville, La	100	31	26.6	29, 30	21.7	6	23.9	4.9
Susquehanna River.								
Wilkesbarre, Pa	178	14	2.0	14, 15	— 1.0	1-5, 8, 9	0.1	3.0
Harrisburg, Pa	70	17	2.6	1	1.2	30	1.9	1.4
W. Br. of Susquehanna.								
Williamsport, Pa	35	20	3.5	4,5	0.8	29, 30	1.9	2.7
Juniata River.								
Huntingdon, Pa	80	24	3.9	3	2.9	27-30	3.1	1.0
Potomac River.								
Harpers Ferry, W. Va	170	16	8.5	19	1.7	13-15	2.6	6.8
James River.								
Lynchburg, Va	257	18	5.8	19	0.4	12	1.8	5.4
Richmond, Va.	110	12	6.5	18	—1.3	12	0.0	7.8
Roanoke River.								
Weldon, N. C.	90	40	16.9	19	8.0	13	9.8	8.9
Cape Fear River.								
Fayetteville, N. C	100	38	17.4	25	2.5	15	5.7	14.9
Lumber River.								
Fairbluff, N. C	10	6	2.9	30	0.3	9, 10	1.7	2.6
Edisto River.								
Edisto, S. C	75	6	5.3	27, 28	2.6	5	3.9	2.7
Pedee River.								
Cheraw, S. C	145	27	15.9	25	1.8	4	5.0	14.1
Black River.								
Kingstree, S. C	60	12	8.0	29	2.2	4,5	4.0	5.8
Lynch Creek.								
Effingham, S. C	35	12	8.0	25	3.3	2,3	5.0	4.7
Santee River.								
St. Stephens, S. C	50	12	8.6	29, 30	4.1	5	6.3	4.5
Congaree River.								
Columbia, S. C	37	15	12.2	24	0.5	3	2.8	11.7
Wateree River.								
Camden, S. C	45	24	22.5	25	4.7	3, 14	9.9	17.8
Waccamaw River.								
Conway, S. C	40	7	4.4	25	1.4	9-11	2.5	3.0
Savannah River.								
Calhoun Falls, S. C	347	......	12.7	24	2.7	2	4.7	10.0
Augusta, Ga	268	32	29.4	25	7.4	3,4	13.9	22.0
Broad River.								
Carlton, Ga	30	.....	13.0	24	2.5	2	4.6	10.5
Flint River.								
Albany, Ga	80	20	12.5	30	1.1	1	3.4	11.4
Chattahoochee River.								
Westpoint, Ga	239	20	17.8	25	3.3	2,3	6.8	14.5
Ocmulgee River.								
Macon, Ga	125	20	20.6	26	2.9	1,2	8.2	17.7
Oconee River.								
Dublin, Ga	60	30	20.8	30	1.2	4	7.3	19.6
Coosa River.								
Rome, Ga	225	30	18.2	25	2.4	1	7.7	15.8
Gadsden, Ala	144	18	19.6	28	1.9	4	8.8	17.7
Alabama River.								
Montgomery, Ala	265	35	33.2	29	3.5	1,2	12.1	29.7
Selma, Ala	212	35	35.0	30	4.2	4,8	12.9	30.8
Tombigbee River.								
Columbus, Miss	303	33	25.5	9	1.0	1	18.3	24.5
Demopolis, Ala.	155	35	52.3	30	8.0	1	38.3	44.3
Black Warrior River.								
Tuscaloosa, Ala	129	43	58.3	25	4.2	1	28.8	54.1
Columbia River.								
Umatilla, Oreg	270	25	16.7	29, 30	15.0	14-16	15.8	1.7
The Dalles, Oreg	166	40	27.0	29, 30	23.8	18	25.4	3.2
Willamette River.								
Albany, Oreg	99	20	3.3	1	2.0	30	2.6	1.3
Portland, Oreg	10	15	15.3	1	12.8	18	13.8	2.5
Sacramento River.								
Red Bluff, Cal	241	23	1.2	1-3	—0.3	25-30	0.3	1.5
Sacramento, Cal	70	29	16.1	1	11.0	30	13.3	5.1

Chart I. Tracks of Centers of High Areas. June, 1900.

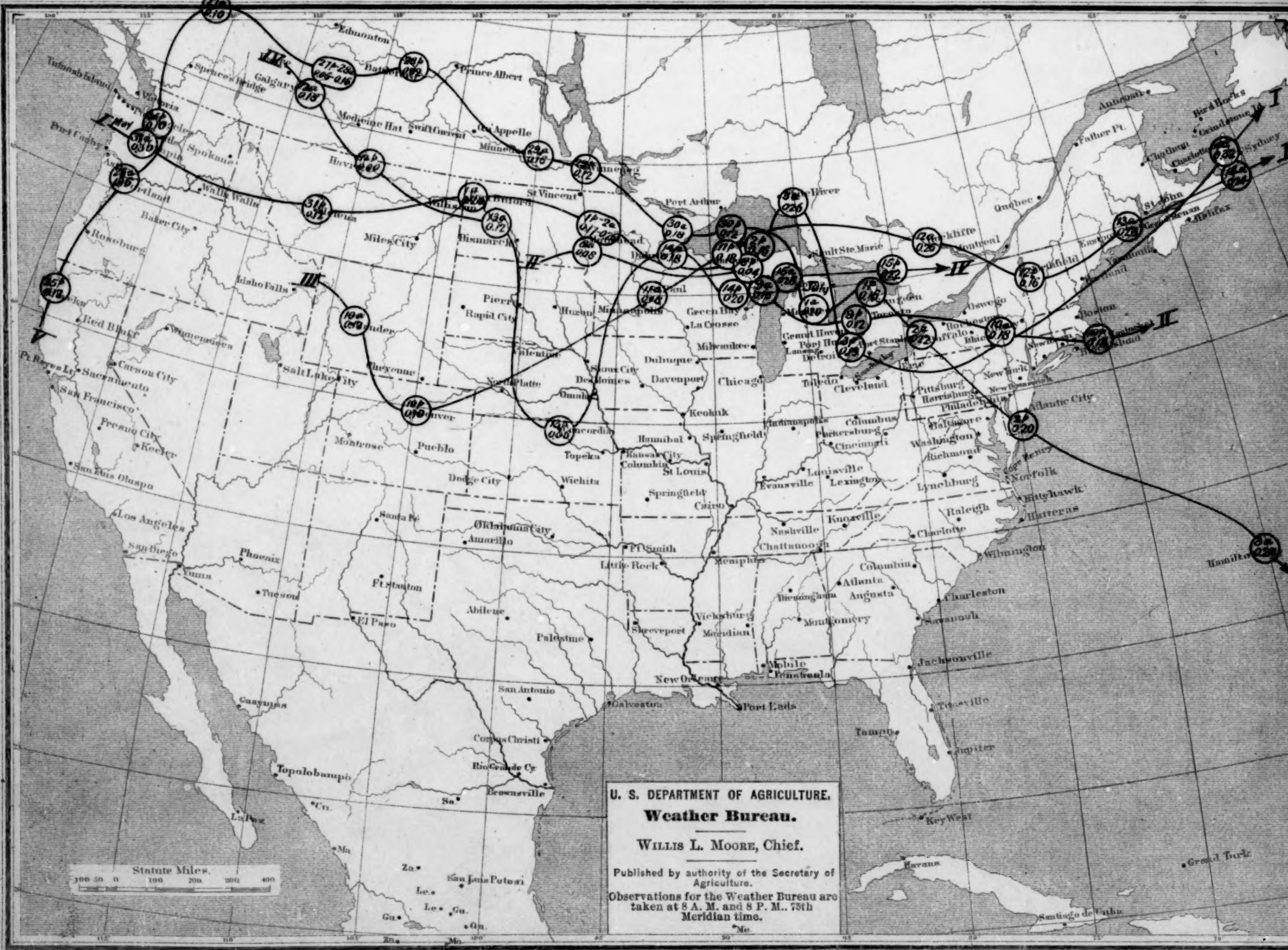

Chart II. Tracks of Centers of Low Areas. June, 1900,

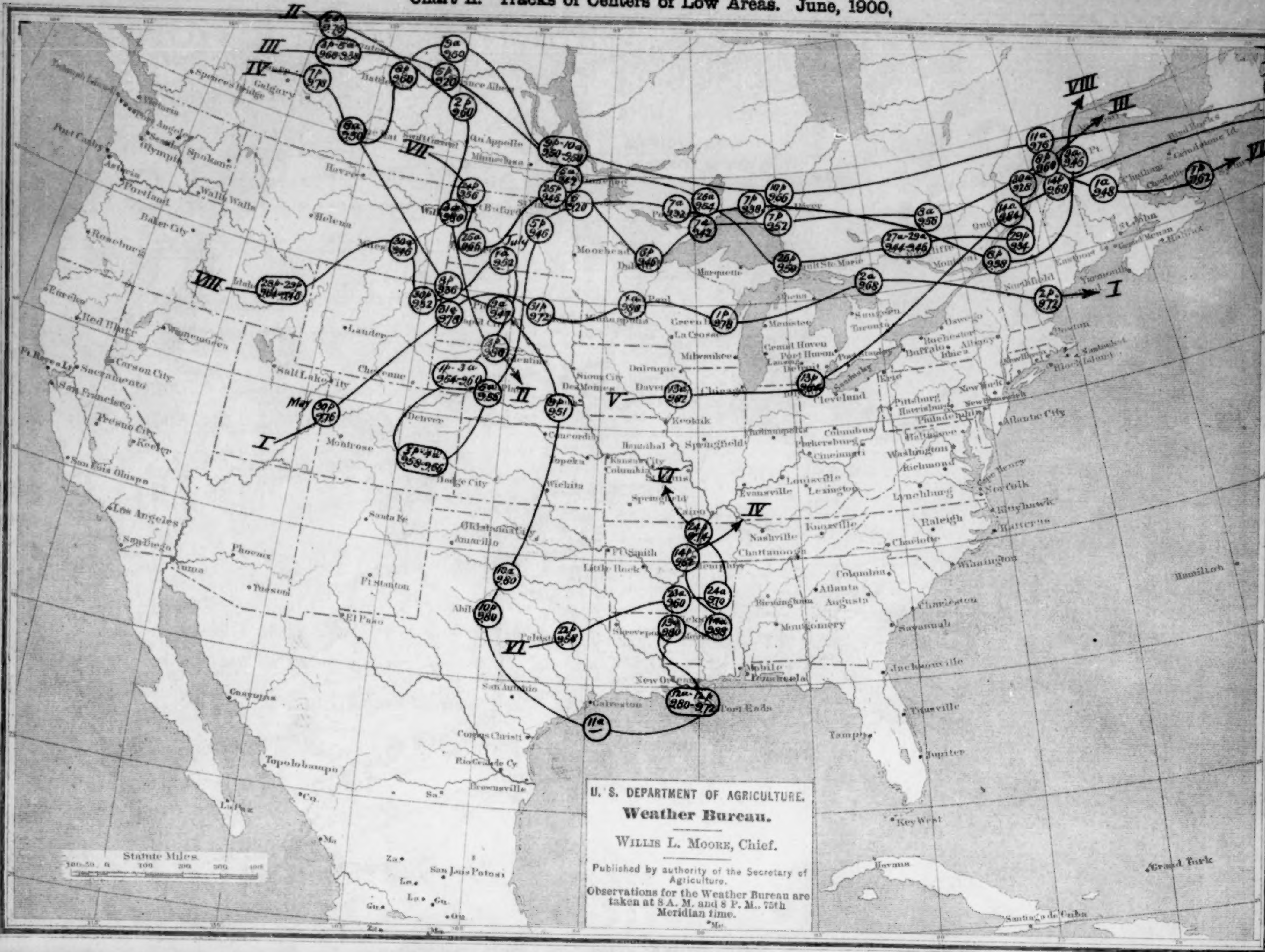

Chart III. Total Precipitation. June, 1900.

Chart III. Total Precipitation. June, 1900.

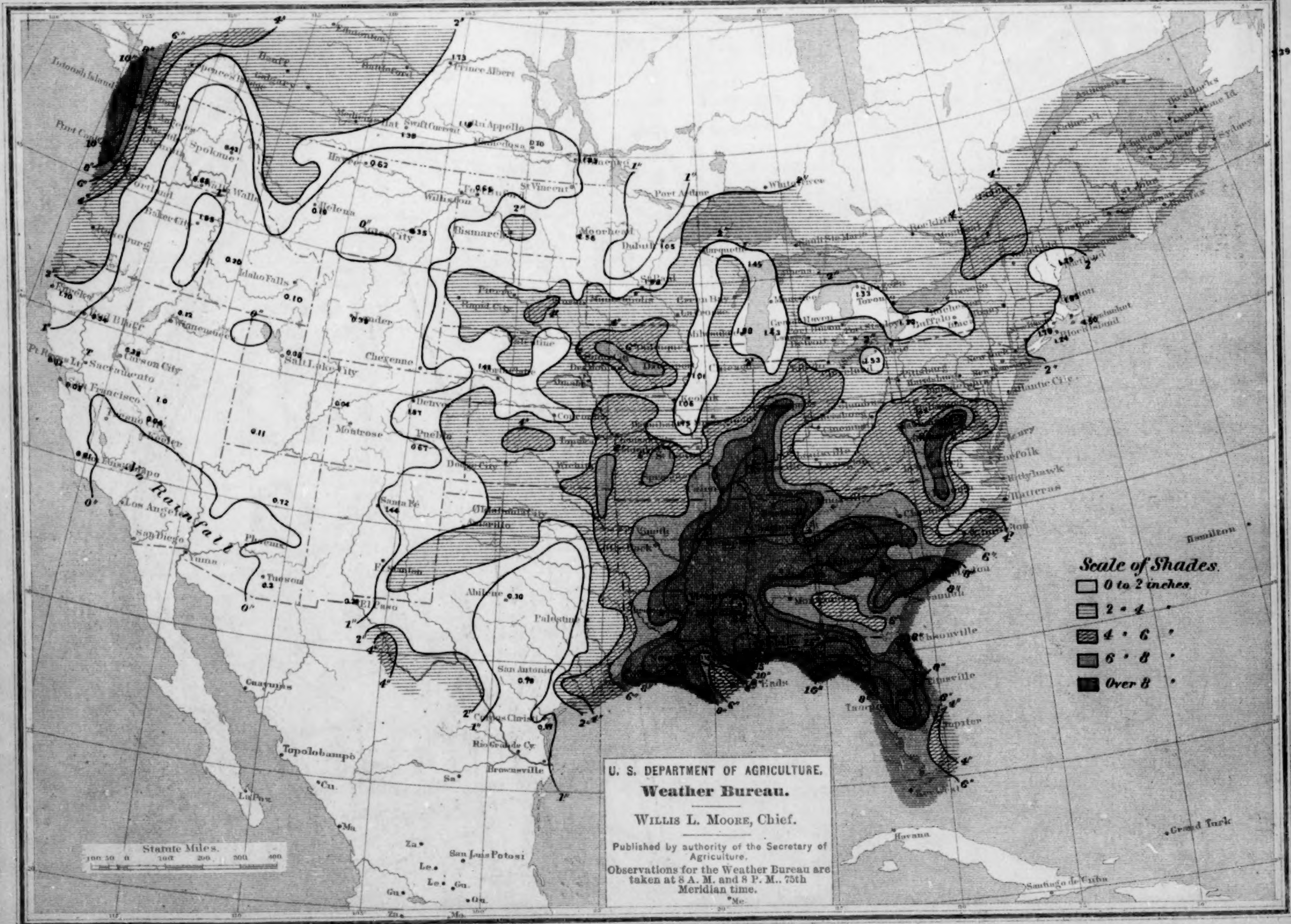

Chart IV. Sea-Level Pressure and Temperature; Resultant Surface Winds. June, 1900.

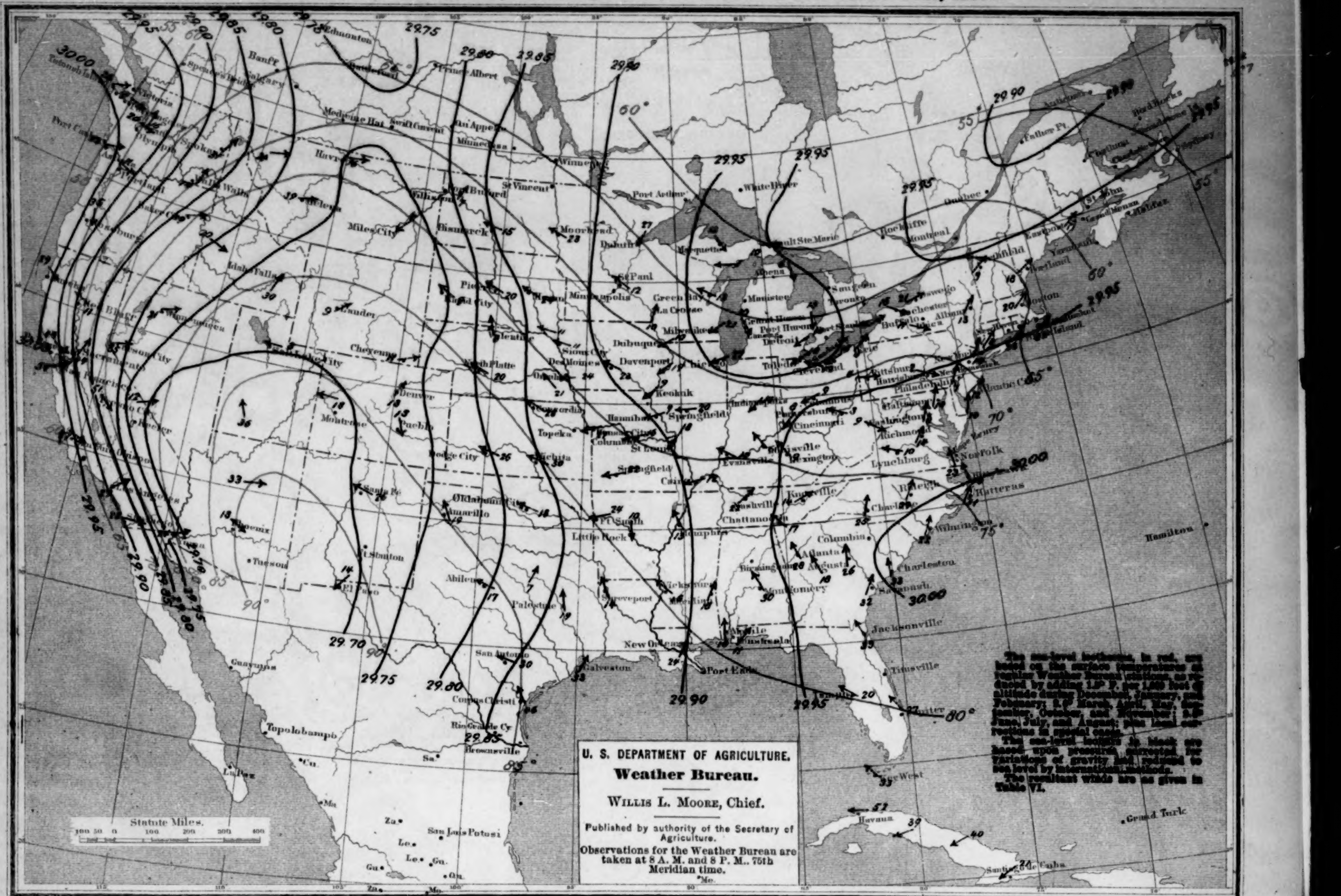

Chart V. Hydrographs for Seven Principal Rivers of the United States. June, 1900.

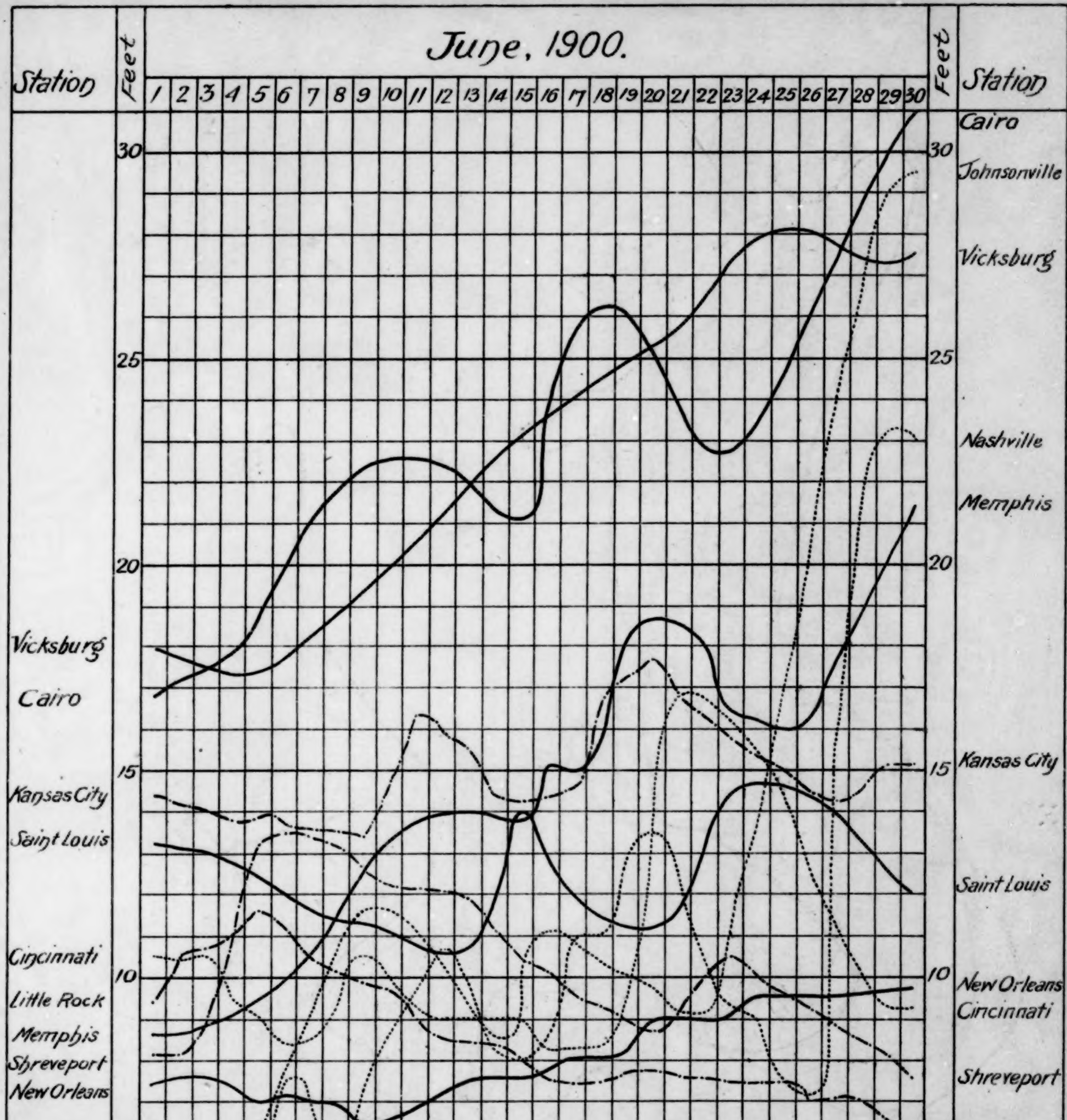

Chart VI. Surface Temperatures; Maximum, Minimum, and Mean. June, 1900.

Chart VII. Percentage of Sunshine. June, 1900.

Chart VII. Percentage of Sunshine. June, 1900.

Chart VIII. West Indian Monthly Isobars, Isotherms, and Resultant Winds. June, 1900.